The Center for
Nanotechnology in Society
ARIZONA STATE UNIVERSITY

The Center for Nanotechnology in Society at Arizona State University

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Annual Report for the Period September 1, 2013 to August 31, 2014

This report includes work conducted at three collaborating universities of NSEC/CNS-ASU: Arizona State University, Georgia Institute of Technology, and the University of Wisconsin-Madison.

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3. Project Summary

The Nanoscale Science and Engineering Center/Center for Nanotechnology in Society at Arizona State University (NSEC/CNS-ASU) combines research, training, and engagement to develop a new approach to governing emerging nanotechnologies. CNS-ASU uses the research methods of "real-time technology assessment" to enable a strategic vision of anticipatory governance through enhanced foresight capabilities, engagement with lay publics, and integration of social science and humanistic work with nanoscale science and engineering research and education.

CNS-ASU has two types of integrated research programs, as well as educational and outreach activities (themselves well-integrated with research). Its real-time technology assessment programs are: RTTA 1, Research and Innovation Systems Assessment, which uses bibliometric and patent analyses to understand the evolving dynamics of the NSE enterprise; RTTA 2, Public Opinion and Values, which uses surveys and quasi-experimental media studies to understand changing public and scientists' perspectives on NSE; RTTA 3, Anticipation and Deliberation, which uses scenario development and other techniques to foster deliberation on plausible NSE applications; and RTTA 4, Reflexivity and Integration, which uses participant-observation and other techniques to assess the Center's influence on reflexivity among NSE collaborators. Second, the thematic research clusters (TRCs), which pursue fundamental knowledge and create linkages across the RTTAs, are: TRC 1, Equity, Equality and Responsibility; and TRC 2, Urban Design, Materials, and the Built Environment ("Nano and the City").

The Center's major conceptual-level achievements have been validating anticipatory governance as a richly generative strategic vision and advancing the related agenda of responsible innovation. Its major operations-level achievements include: 1) demonstrating capacities for foresight, engagement, and integration that constitute anticipatory governance; 2) completing the "end-to-end" activities by linking multiple RTTA capacities for (the earlier) TRC 2 to create novel insights in a study of nanotechnology and the brain and for TRC 1 to create novel insights into equity and nanotechnology; 3) deepening the integration of NSE researchers into CNS-ASU; and 4) building collaborations for informal science education (ISE) on the societal aspects of NSE. Programmatic achievements in the reporting year include: developing a new patent-mapping system based on patent citations; developing real-time insight into social media communication around nanotechnology; conducting a new type of future-oriented deliberation at scale; fielding a major study of CNS-ASU participants; developing a program to train scientists and engineers in engaging with the developing world; and creating compelling visual scenarios of Phoenix in 2050 as a nano-enhanced city.

The Center's principal **intellectual merit** derives from the large-scale, interdisciplinary ensemble that underpins it. The ability to generate creative scholarship, embrace and facilitate interactions among disparate approaches to understanding nanotechnologies, and build complementary capacities to tap that knowledge for governance, is the critical intellectual contribution to which CNS-ASU aspires. The Center's work has a substantial impact on scholarship, not only in terms of publications and citations but also through hosting international visitors. For **broader impact**, the Center has coupled research, education, and outreach activities exceptionally well by training significant numbers of new scholars from the social sciences and NSE, incorporating forefront research into a new winter school for early career scholars, new courses and ISE opportunities, and returning lessons learned and techniques developed for outreach back to the classroom. The Center has broadened the participation of under-represented groups by cultivating junior scholarship and raising issues of equity, gender, and disability as objects of programmatic study. The Center has enhanced the infrastructure for research and education by leading the creation of a new journal, organizing community-defining conferences, producing community-defining sources of knowledge, serving as an international hub for scores of scholars, sharing data and instruments widely, and disseminating its results aggressively to its academic peers as well as to public, scientific, industry, and policy audiences through traditional means and increasingly through new media.

4. List of Center Participants, Advisory Boards, and Participating Institutions

4. (a) LIST OF CENTER PARTICIPANTS

Participants receiving Center support:

ASU

Elizabeth Adams	**Faculty Associate**	**Engin. Academic & Student Affairs**
Braden Allenby	**Professor**	**Civil & Environmental Engineering**
Jean Andino	**Associate Professor**	**Engineering Matter, Transport & Energy**
Moshe Apelas	Associate Professor	Engineering Computer Science
Andrew Askland	Director	Center for Law, Science & Innovation
Denise Baker	Faculty Associate	Social & Behavioral Sciences
George Basile	Executive Director	Decision Theatre for a Desert City
Ira Bennett	**Assistant Research Professor**	**Consort. for Science, Policy & Outcomes**
Philip Bernick	Assistant Professor	English
Mimmo Bonanni	**Associate Librarian**	**Cyberinfrastructure Services**
Christopher Boone	Professor	Human Evolution & Social Change
Prasad Boradkar	**Associate Professor**	**Architecture & Landscape Architecture**
Katja Brundiers	Academic Associate	Global Institute of Sustainability
Harvey Bryan	Professor	Architecture & Landscape Architecture
Marilyn P. Carlson	Professor	Mathematics & Statistics
Matthew Chew	Faculty Associate	Global Institute of Sustainability
Nalini Chhetri	Lecturer	Global Institute of Sustainability
Netra Chhetri	Assistant Professor	Consort. for Science, Policy & Outcomes
David Conz	Lecturer	Letters & Sciences
Elizabeth Corley	**Associate Professor**	**Public Affairs**
Kevin Corley	Assistant Professor	Management
Kurt Creager	Executive Director	Stardust Center
Peter Crozier	Professor	Engineering Matter, Transport & Energy
Sandwip Dey	Professor	Engineering
Rodolfo Diaz	Professor	Electrical Engineering
Chris Diehnelt	Assistant Research Professor	Biodesign Institute
Gary Dirks	Director	LightWorks
Travis Doom	**Program Specialist**	**Consort. for Science, Policy & Outcomes**
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Terrie Lee Ekin	Director	CLAS Research Administration
Karin Ellison	**Associate Director**	**Biology & Society**
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Sandy Epstein	Sr. Mgr. Strategic Bus. Dev.	Decision Theatre
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Timothy Eschrich	Process Engrg. Manager	Ctr. for Solid State Electronics Research
Mahmud Farooque	**Associate Director**	**Consort. for Science, Policy & Outcomes**
Tricia Farwell	Professor	Journalism & Mass Communication
Edward Finn	**Director/Assistant Professor**	**Arts, Media and Engineering**
Adelheid Fischer	**Staff**	**Innovation Space**
Erik Fisher	**Assistant Professor**	**Political Science**
Matthew Fraser	**Associate Professor**	**Sustainable Engrg. & Built Environment**
Sylvain Gallais	Clinical Professor	Languages & Cultures
Joel Garreau	Lincoln Professor of Law	Law

Alexandra Gino	Faculty Associate	Consort. for Science, Policy & Outcomes
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Aaron Golub	Assistant Professor	Geographical Sciences & Urban Planning
Deborah Gonzalez	Chief Academic Officer	University Public Schools
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Kimberly Grout	**Coordinator Senior**	**Global institute of Sustainability**
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Devens Gust	Professor	Chemistry & Biochemistry
David H. Guston	**Professor**	**Political Science**
Ed Hackett	**Professor**	**Human Evolution & Social Change**
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Mark Hannah	**Assistant Professor**	**English**
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Kirsten Hendrickson	Lecturer	Chemistry & Biochemistry
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James Hershauer	Professor	Management
William Heywood	Assistant Clinical Professor	Design
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Bruna De Marchi	Bergen , Guest Researcher	Sciences & the Humanities
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Jeff Desroches	Bus. Development Manager	ATMI, Inc.
Terry Devitt	Wisconsin, Science Writer	Science & Technology
Ricardo Dominguez	Calif., San Diego, Assoc. Prof.	Visual Arts
Heather Douglas	**Univ. of Waterloo, Assoc. Prof.**	**Philosophy**
Robin Downey	Genomics & Society Advisor	Genome British Columbia
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Guillermo Foladori	Universidad de Zacatecas	Nanotechnology
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Silvio Funtowicz	European Commission	Protection & Security of the Citizen
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Wayne Fuqua	Western Michigan, Professor	Psychology
Jason Gallo	Researcher	Science and Technology Institute
Stefan Gammel	Researcher	Technical University of Darmstadt
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Jean Goodwin	Iowa State Univ., Assoc. Prof.	English
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Richard Klavans	President	SciTech Strategies Inc.
Daniel Kleinman	Wisconsin, Professor	Rural Sociology
Mark Knell	Norwegian Institute	Chemistry
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Ray Kurzweil	Author	
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Phil Macnaghten	Durham University, Professor	Geography
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Farzad Mahootian	**New York Univ., Professor**	**Global Liberal Studies**
Jim Malone	Physician	Private Practice
Mike Manasco	Project Manager	Heliae
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Paul Martin	Sr. V.P. Science Learning	Science Museum of Minnesota
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Andrew Maynard	**Univ. of Michigan, Director**	**Risk Science Center**
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David McConville	Director, Noospheric Res.	The Elumenati, LLC.
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Jamie McEvoy	**Montana State, Asst. Prof.**	**Geography**
Robert McGinn	Stanford, Professor	Science, Technology, & Society
Alan McGowan	Eugene Lang, Adjunct. Fac.	New School for Liberal Arts
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James McShea	**Osher Lifelong Learning**	
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Celia Merzbacher	Vice President	Semi-Conductor Research Corporation
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Colin Milburn	**Cal.-Davis., Assoc. Professor**	**English and Science & Technology Studies**
Thaddeus Miller	**Portland State Univ, Asst Prof.**	**Urban Studies & Planning**
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Carl Mitcham	CO School of Mines, Prof.	Liberal Arts & International Studies
Cyrus Mody	Rice University, Asst. Prof.	History
Alison Mohr	Senior Research Fellow	University of Nottingham
Julia A. Moore	Deputy Director	Woodrow Wilson Center
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Jeffery Morris	EPA, Natl. Program Director	Nanotechnology Research Program
Nora Moynihan	Comm. Partnerships Coord.	Port Discovery
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Alan Nelson	Director	Biodesign Institute
Richard Nelson	Columbia University, Professor	Economics
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Stefanie Seitz	Karlsruhe, Research Fellow	Instit. Tech. Assessment & Sys. Analysis
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Veekas Shrivastava	**Participant**	
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Harro Van Lente	Utrecht Univ., Assoc. Prof.	Emerging Technologies
Thomas Van Valey	Professor Emeritus	Western Michigan University
Stephanie Vasko	**Pennsylvania, Sen. Res. Asst.**	**Rock Ethics Institute**
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Catherine Vrentas	Mol. Biologist/Sci. Out. Spec.	U.S. Department of Agriculture
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Julie Walker	Project Manager	Windmill Ranch, LLC.
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Vivian Weil	Illinois Inst. Tech., Prof./Dir.	Ethics / CSEP
Martin Weinel	**Cardiff Univ., Research Assoc.**	**Social Sciences**
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Kyle Powys Whyte	Michigan, Assistant Professor	Philosophy
Fern Wickson	GenØk, Associate Professor	Center for Biosafety
Matthias Wienroth	Edinburgh, Acad. Res. Fellow	Genomics Forum
Terence Wilkins	University of Leeds, Professor	Inst. of Particle Science & Engineering
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Joan Woolfrey	West Chester, Assoc. Prof.	Philosophy
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Michael Xenos	**Wisconsin, Assoc. Professor**	**Communication Arts**
Charyl Yarbrough	Rutgers, Project Director	Workforce Development
Go Yoshizawa	Project Lecturer	Tokyo University
Peter Yeadon	Associate Professor/Architect	RISD/Decker Yeadon LLC
Edward You	Supv. Special Agent	FBI Weapons of Mass Destruction
Paul Youngman	UNC-Charlotte, Assoc. Prof.	Humanities, Technology & Science
Jan Youtie	**Georgia Tech, Sr. Research.**	**Enterprise Innovation Institute**
G. Zenner Petersen	Wisconsin-Madison, Dir. Ed.	Materials Research Science & Engineering
Basile Zimmermann	**Univ. of Geneva, Asst. Prof.**	**Chinese Studies**

Chakanaka Zinyemba	**Mapping & Planning Support**	**Social Geographer**
Lee Zwanziger	Designated Federal Official	Food & Drug Administration
Steven Zylstra	Pres. & Chief Exec. Officer	Arizona Technology Council

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Doe Daughtrey	Post-doctoral Fellow	Religious Studies
Hsiang-Kai D. Dong	**Post-doctoral Fellow**	**Organizational Research & Design**
Michael Fisher	**Post-doctoral Fellow**	**Biodesign Institute**
Rider Foley	**Post-doctoral Fellow**	**Sustainability**
Daniel Higgins	Post-doctoral Fellow	Center for Nanotechnology in Society
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Anastasios Panaretos	Post-doctoral Fellow	Electrical Engineering
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Michael Reinsborough	**Post-doctoral Fellow**	**Center for Nanotechnology in Society**
Cathy Slade	Post-doctoral Fellow	Public Policy
Olgica Trenchevska	**Post-doctoral Fellow**	**Biodesign Institute**
Walter Valdivia	Post-doctoral Fellow	Public Administration
Kathryn Vignone	**Post-doctoral Fellow**	**Center for Nanotechnology in Society**
Berea Williams	Post-doctoral Fellow	Chemistry & Biochemistry

ASU
Graduate Researchers

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Parul Agrawal	Materials Science & Engineering
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Judd Anderman	Science & Technology Policy
Caroline Appleton	Biology & Society
Ebraheem Azhar	Electrical Engineering
Marci Baranski	Biology & Society
Ceyhan Beckham	Electrical Engineering
Michael Bernstein	**Sustainability**
Monamie Bhadra	Human & Social Dimensions of S & T
Shreya Bhattacharyya	Chemistry & Biochemistry
Bradley Brennan	Chemistry & Biochemistry
Jennifer Brian	Biology & Society
Miles Brundage	**Human & Social Dimensions of S & T**
Michael Burnam-Fink	**Human & Social Dimensions of S & T**
Andrew Candelaria	**Nanoscience**
Melissa Cannon	**Science and Technology Policy**
Angela Cazel-Jahn	**Sustainable Solutions**
Santhosh Chenna	Engineering of Matter, Transport & Energy
Shannon Conley	**Political Science**
Cherish Connolly	**Science & Technology Policy**
Jessica Corman	Biology
William Curran	Electrical Engineering
Robert Davis	Political Science
Natalie DeGraaf	Science & Technology Policy
Shannon DiNapoli	Life Sciences

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Kyle Doudrick	Sustainable Engineering & Built Envir.
Daniel Eisenberg	**Engineering**
Justin Flory	Chemistry & Biochemistry
Lori Fobbs-Guillory	**Science & Technology Policy**
Christina Foster	**Curriculum & Instruction (Engineering)**
Ariana Fox	Biology
Jinglin Fu	Chemistry & Biochemistry
Gretchen Gano	**Human & Social Dimensions of S & T**
Manuel Garay Valenzuela	Education Leadership & Policy Studies
Aixa Garcia-Mont	Education
Meredith Gartin	Global Health
Sandeep Kaur Gill	Nanoscience
Cecilia Gonzalez	Life Sciences
Cesar Gonzalez Esquer	SOLS Graduate Programs
Annie Hale	Science & Technology Policy
Kelly Hale	Anthropology
Dongran Han	Chemistry
Keivon Hobeheidar	Biological Sciences
Qian Hu	Public Affairs
Nate Hisamura	Mathematics
Troy Hottle	**Sustainable Engineering & Built Envir.**
Douglas Huron	Global Technology Development
Christoforos Ioannidis	Philosophy
Daniela Ivan	English
Taylor Jackson	Biology & Society
Karina Jacobs	**Science & Technology Policy**
Jeffrey Jennings	**Science & Technology Policy**
Lijing Jiang	Chemistry & Biochemistry
Valerie Johnson	Design
Craig Jolley	Biophysics
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Cameron Keys	**PSM Nanoscience**
Andrew Kao	School of Public Affairs
Risto Karinen	Political Science
Lauren Keeler	Sustainability
Eric Kennedy	**Human & Social Dimensions of S & T**
Julia Kerran	Urban & Environmental Planning
Ashley Kibel	Physics
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Jonathan Lappen	Geography
William Lepkowski	Chemistry & Biochemistry
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Blakely McConnell	Art
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Chris Mercer	Sustainability
Emily Molfino	Political Science
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Vicki Moore	Chemistry & Biochemistry
Romarie Morales	Applied Mathematics
Jeffrey Moran	Mechanical Engineering
Rebecca Murans	Design
Israel Murguia	Public Administration
Anarina Murillo	**Applied Mathematics for Life & SocSc**
Tanya Musgrave	Public Policy
Tracy Niday	Chemistry & Biochemistry
Jason O'Leary	**Science & Technology Policy**
Azra Panjwani	Mathematics
John Parsi	Political Science
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David Proffitt	Urban & Environmental Planning
Alecia Radatz	**Human & Social Dimenstions of S & T**
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Caroline Reid	Urban & Environmental Planning
Stuart Rice	**Educational Policy & Evaluation**
Alicia Rodgers	Science & Technology Policy
Laura Rodriguez	Technology & Innovation
Heather Ross	**Human & Social Dimensions of S & T**
John Sadauskas	**Educational Tech. (Arts, Media & Engin.)**
Jathan Sadowski	**Science, Technology & Ethics**
Kehinde Salau	Mathematics & Statistics
Cyndy Schwartz	Human & Social Dimensions of S & T
Jaswinder Scharma	Biomedicine
Lee Seabrooke	Human & Social Dimensions of S & T
Ankur Shah	**Biomedical Engineering**
Nisha Sherma	Chemistry
Quinn Spadola	Physics
Lucia Stavig	Justice Studies
Yuri Sylvester	Political Science
Trista Taylor	**Public Administration**
Justin Tosi	Political Science
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Cecilie Glerup	Copenhagen Business School	Public Policy
Kyle Gracey	University of Chicago	Public Policy
Ted Greenhalgh	Nevada, Las Vegas	Environmental Studies
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Erin Lamos	Georgia Tech	Public Policy
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Yin Li	Georgia Tech	Public Policy
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TingTing Ma	**Beijing Institute of Tech.**	**Management**
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Yu Meng	Georgia Tech	Public Policy
Brian Milchak	**Virginia Tech**	**Natural Resources Policy**
Daniel Miller	**Virginia Polytechnic Inst.**	**Science & Technology Studies**
Georgia Miller	**Univ. of New South Wales**	**Humanities**
Bastien Miorin	Grenoble Inst. of Technology	Science & Technology Democracy
Mary Moore	Wisconsin	Computer Science
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Jayesh Patil	Georgia Tech	Computing
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Gernot Rieder	Vienna	Science, Technology & Society
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Simone Schumann	Vienna	Social Studies
Vanessa Schweizer	Carnegie Mellon	Engineering & Public Policy
Sarah Scripps	South Carolina	History
Jeong Yim Seo	Ehwa Women’s Univ., Korea	Nanotechnology
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Molly Simis	**Wisconsin**	**Life Sciences Communication**
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Stephanie Vasko	Washington	Materials Chemistry & Nanotechnology
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Yi Zhang	Beijing Institute of Tech.	Management
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ASU
Undergrad Interns & Researchers

Krizia Alba		**Graphic Design**
Kalil Abdullah		Molecular Biotechnology
Eric Beeler		Sustainability

Nidhi Bhalla	Political Science
Nolan Bidese	Biomedical Engineering
Brandon Borsheim	Sustainability
William Bowman	Materials Science & Engineering
Linda Boyd	Geography
Tanner Brants	Management
Robert Bui	**Electrical Engineering**
Connie Burdis	Supply Chain Management
Geoffrey Byers	**Business Tourism/Management**
David Calderon	Molecular Bioscience & Biotechnology
Ricky Carmago	**Marketing/Management**
Wyatt Chafin	**Marketing**
Rahul Chhabra	Chemistry
Josh Choi	Biomedical Engineering & Economics
Kelley Conley	Psychology
Aaron Cornejo	Biomedical Engineering
Amie Dabu	Sustainability
Rob Davis	Biology
Kendall Denike	**Industrial Design**
Emilie Doering	**Global Studies**
Daniel Dykas	**Industrial Design**
David Edwards	English & Creative Writing
Tara Egnatios	Public Policy
Daniel Escolin	**Film and Media Production**
Alicia Fremling	Management, Political Science, Spanish
Tereza Fritz	Global Studies
Andrew Gaddis	Industrial Engineering
Ian Griffith	Film & Media Studies
Alexandria High	**Business**
Hannah Hall	Sustainability
Catherine Hoke	Mechanical Engineering
Sarah Hoke	**Asian Language**
Rebecca Hudson	Business
Joleen Jansen	**Industrial Design**
Thomas Kajder	**Computer Science**
David Kreie	**Graphic Design**
Dania Lopez	**Biochemistry**
Benjamin Lowenstein	Sociology
Rachel Lowenstein	Business
Alexander MacLean	Honors
Keith Martin	Film
Colin McDonald-Smith	Computer Science
Tobie Milford	Biology & Society
Timothy Norris	Architectural Studies
Sidra Omer	Journalism & Mass Communication
Girish Pathangey	**Biomedical Engineering**
Mark Petersen	Economics
Zachary Pirtle	Mechanical Engineering
Jaron Reed	Political Science
David Renolds	Chemical Engineering
Lucas Rogers	Engineering

Dusana Schnell-Vivas	Marketing
Jesse Shedd	Anthropology
Suzanne Shlom	Design Studies
Rachel Smith	Biology & Society
Chad Stearns	Economics
Evan Taylor	**Sustainability**
Jonah Thomas	**Biomedical Engineering**
Duncan Thomason	**Graphic Design**
Clelia Tommi	**Earth Space Exploration**
Daryl Traylor	Microbiology
Xavier Vargas	**Mechanical Engineering**
Kaitlin Vortherms	**Civil Engineering (Envir. Engin.)**
Tai Wallace	**Sustainability**
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Sharyn Finney	Georgia Tech	Public Policy & Economics
Brian Lynch	Georgia Tech	Public Policy
John Garner	Georgia Tech	Public Policy
Clay Karwisch	Georgia Tech	History, Technology & Society
Charles Luke McCloud	Georgia Tech	Public Policy
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Laura Rodriguez	Georgia Tech	International Affairs
Dave Schoeneck	Georgia Tech	Physics
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Aaron Heinzmann	Hardware Engineer	Intel
Aaron Herring	Designer	Gould Evans
Brad Herring	**Mus. of Life Science, Director**	**Nanoscale Informal Science Education**
Katie Herzog	**Graduate Research Assistant**	**University of Alberta**
Don Hiatt	Participant	
Leda Hiatt	Participant	
Paul Hickey	Systems Administrator	Mesa Community College
Diana Hicks	Public Policy	Georgia Institute of Tech.
Lauren Higgins	Cartographer	Metacurrency Project
Stephen Hilgartner	Science & Technology Studies	Cornell University
George Hoffman	City Manager	City of Apache Junction
Michael Holland	Staff	House Science Committee
Linda Holman Bentley	**Manager, Adult Services Dept.**	**Burton Barr Central Library**
Liz Hormann	**Program Manager**	**South of Market EcoDistrict**
Prathma Howe	Participant	
Wan-Ling Huang	**Assistant Professor**	**Tamkang University**
John Hughes	Member	Nanotech. Industry Liaison
Kent Hughes	Director	Teach America
Noela Invernizzi	**Federal University of Parana**	**Development Studies**
Ali Jackson	**Director, Natl. Collab. Proj.**	**Sciencenter**
Sol Jaffe	Indep. Mgmt. Consultant	
Anil Jain	Computer Science & Engin.	Michigan State University
Ann Jarmusch	Writer / Editor	
Charles Jeffery	Dean, Institutional Planning	Glendale Community College
Carol Johnson	Planning Department	City of Phoenix
Eric Juarez	Participant	
Nikki Julien	**Participant**	
Eli Kawam	President and CTO	EKLATEK Engineering
Luciano Kay	**Postdoctoral Scholar**	**California, Santa Barbara**
Donna Kent	Global Studies	Televerde
Timothy Kiehl	Artist/Craftsman	Airplayn
Zach Kieter	Participant	
Matt Kim	Member	Nanotech. Industry Liaison
Evgeny Klochikhin	Student	University of Manchester
Mitzi Krockover	Senior Consultant	Sokolov, Sokolov, Burgess Solutions
Ray Kurzweil	Member	Board of Visitors
Daniel LaDuke	**Energy Engineer**	**Western Mass. Electric Company**
Nancy LaPlaca	**Former Policy Advisor**	**Arizona Corporation Commission**
Claudia Leon	**Project Manager**	**Eureka**
Loet Leydesdorff	**Professor**	**University of Amsterdam**
Dirk Libaers	Public Policy	Georgia Institute of Tech.
Jiayong Li	Participant	
Leslie Lindon	**Founder**	**Ikologi/Phoenix Rising**
Troy Livingston	Staff	NISEnet
Jim Lodge	**Vice President**	**NRG Energy, Inc.**
Paul Loomans	**Member**	**Phoenix Spokes People**
Juan Lucena	**Associate Professor**	**Colorado School of Mines**
Eric Luchian	Research Associate	Lancaster University
Connie Mabelson	Attorney	Mabelson Law Group
Eric Magrane	Graduate Student	University of Arizona
Uttam Malani	Public Policy	Georgia Institute of Technology

Nikhil Malvankar	**Postdoctoral Research Assoc.**	**Massachusetts Amherst**
Tony Maniaci	Director Product Develop.	ITel
Benjamin M. Mann	Program Manager	Defense Science Office
Robin Marks	Staff	NISEnet
Florence Matusky	Writer	
Catherine May	Senior Historical Analyst	Salt River Project
Carol Mayer-Reed	**Landscape Architect**	**Mayer-Reed Architects**
Kimberlie McCue	**Asst. Dir, Research, Conserv.**	**Desert Botanical Garden**
John McGarity	Member	Nanotech. Industry Liaison
Chris McKibben	Estimator	Underwood Bros., Inc.
Guy McLain	**Director**	**Lyman & Merrie Wood Museum**
Maxwell J. Mehlman	Professor	Case Western Reserve Univ.
Denise Meridith	**CEO/President**	**Denise Meridith Consultants, Inc.**
Celia Merzbacher	Staff	Office of Naval Research
Daniel Metlay	Staff	Nuclear Waste Review Board
Jeff Michelsen	Property Attorney	TraskBritt Intellectual
Danielle Millam	Director of Development	Las Vegas-Clark Cty Library Dist.
Blaine Miller	President & Prin. Analyst	Modern Insights
Elizabeth Miller	Water Res. Planning Advisor	City of Scottsdale
John Miller	Dir. of Information Tech.	Litchfield Elementary School District
Laurence Miller	Physician	Mayo Clinic – Scottsdale
Michael Moffitt	Associate Professor	University of Michigan
John Moravec	Senior Lecturer	University of Minnesota
Daniel Morrison	Professor	Vanderbilt University
George Muncaster	Professor	Scottsdale Community College
Sean Murdock	Member	Nanotech. Industry Liaison
Mark Muro	**Fellow & Policy Director**	**Brookings Institute**
Richard Neal	**Congressman**	**U.S. Congress**
Paul Nealey	**Professor**	**University of Chicago**
Carolyn Nelson	Technical Delivery Manager	Bank of America
Lee Nelson	Prin., Scott L. Libby Elem.	Litchfield Elementary School District
Richard Nelson	Member	Board of Visitors
Susan Norton	Editor	National Geographic
Christina Nulle	**Strategic Mgmt of Afford.**	**Kaiser Permanente**
Thomas Ormston	Product Support Manager	Apriva ISS
James Paul	Staff	House Committee
Jim Paisley	Director, Assess. Services	Leathers Milligan & Associates
Lisa Parks	**Member**	**Phoenix Spokes People**
Spencer Pearce	Participant	
Angela G. Pereira	**Eur. Comm., Scientific Offc.**	**Joint Research Centre**
Nils Petersen	**Adjunct Professor**	**University of Alberta**
Pat Petriai	Participant	
Maggie Pingolt	Writer	The Embryo Project
Diane Planidin	Real Estate Agent	Re/Max Fine Properties
Melissa Pulsifer	Marketing Coordinator	Richard + Bauer Architecture
Allison Pyrch	**Geotechnical Engineer**	**Shannon and Wilson, Inc.**
Kristin Raffaelle	Executive Director / CEO	PACeHR
Ismael Rafols	**Sr. Lecturer, Univ. of Sussex**	**Science & Technology Policy Research**
Jud Ready	**Adjunct Professor**	**Georgia Tech**
Priscilla Regan	Professor	Social, Behavioral & Econ.
Roger Reynolds	Composer/Professor	Univ. of California, San Diego

Jack Ring	Systemist	
Estelle Robichaux	Graduate Student	University of Florida
Douglas Robinson	**Profess, Cell Biology**	**Johns Hopkins University**
Michael Roco	Senior Advisor	National Science Foundation
Jacob Rosenthal	Maker	Heatsync Labs
Eric Rosewall	**Program Director**	**Depave**
Donald Roth	Participant	
Marc Rothenberg	Staff	Legislative & Public Affairs
Sean Rothman	Professional	University of Manchester
Jonathan Rothwell	**Senior Research Associate**	**Brookings Institute**
Leslie Rycroft	Vice President	Scottsdale League for the Arts
Dana Sadler	District Human Resources	Home Depot
Tind Shepper Ryen	Staff	House Committee on Science
Nick Sauvie	**Executive Director**	**Rose Community Development Corp.**
Michael Savarese	Senior Software Architect	Unicorn Media, Inc.
Laura Schiavo	Curator	National Building Museum
Stuart Scott	Participant	
Evan Selinger	Associate Professor	Rochester Institute of Technology
Karen Shakman	Project Architect	Iconic Architecture
Mark Shapiro	Member	Board of Visitors
Clare Shelley-Egan	**Post-doc Researcher**	**University of Twente**
Rob Shields	**Chair and Professor**	**University of Alberta**
Ingrid Shults	Educator	Collins College
Gregory Simonson	Professor	Science, Tech. & Military
Mitchell Small	Professor	Carnegie Mellon University
Scott Smith	Founder	Changeist, LLC.
Jacque Sokolov	Chairman / Senior Partner	Sokolov, Sokolov, Burgess Solutions
Alexa Stephens	Public Policy	Georgia Tech
Kerri Stone	Student	Colorado School of Mines
Reva Stone	Artist	Winnipeg Art Gallery
Deborah Strumsky	**Assistant Professor**	**UNC Charlotte**
Lorraine Szarka	**Participant**	
Karen Tanenbaum	Graduate Student	Simon Fraser University
Carlos Tarin	**Graduate Student**	**University of Utah**
Julie Taylor	**Graduate Student**	**University of Utah**
Samantha Taylor	Participant	
Jason Teske	Buyer / Planner	Lasertel, Inc.
Judith Testani	Owner/President	Testani Design Troupe, Inc.
D.A. Therrien	Artist	
Gerald Thurman	Instructor	Scottsdale Community College
Raoul Tibes	Assoc. Dir, Leukemias Prog.	Mayo Clinic
Mike Trier	Senior Budget Analyst	Maricopa Community Colleges
Rebecca Toor	Associate Editor	Research Media Ltd.
Joanne Tornow	Program Manager	National Science Foundation
Cassandra Valdez	Participant	
Steve Valev	Associate	Gould Evans
Ian Vandeventer	Owner	Ivy Consulting, Inc.
Dawn Visser	President	MJS Designs, Inc.
Simone van der Burg	UMC St. Radboud, Sr. Res.	Scientific Inst., Quality of Healthcare
Anna Waldron	Professor	Cornell University
Jacob Warr	**Policy Advisor**	**Trimet**

Fred Weber	Member	Nanotech. Industry Liaison
Fan Wei	Student	Beijing Institute of Technology
Eric Welch	**Associate Professor**	**University of Illinois, Chicago**
Marshall Whitmire	Owner & Managing Director	RCI Surveys, Inc.
Thalia Williams	Participant	
Kristine Wilcox	Principal	Kristine Wilcox Consulting
Jeff Williamson	CEO/Pres. & Exec. Director	Phoenix Zoo
James Wilsdon	Director	The Royal Society
Carly Wobig	Graduate Student	University of Illinois
Gregory Woodhead	Director of Support Services	Corinthian Colleges
Chen Xu	**Graduate Student**	**Georgia Tech**
Anita Yap	**Community Advocate**	
Donghua Zhu	Professor	Beijing Institute of Technology
Ranu Zunjarwad	Product Designer/Writer	

Nanotechnology in Society Network PIs:

Davis Baird	University of South Carolina
Richard Freedman	Harvard University
Barbara Harthorn	UCSB
Lynne Zucker	UCLA

Expert and Oversight Panel for National Citizens' Technology Forum

Roberta M. Berry	Professor	Georgia Tech
Stephen Helms Tillery	Professor	ASU
Maxwell J. Mehlman	Professor	Case Western Reserve
Kristen Kulinowski	Executive Director	Rice
Jason S. Robert	Assistant Professor	ASU
Ida Andersen	Staff	Danish Board of Technology
David Rejeski	Director	Woodrow Wilson Center

4. (b) LIST OF ADVISORY BOARDS

i. Executive Committee

Elizabeth Corley, Associate Professor, ASU Department of Public Affairs
David H. Guston, Professor, ASU School of Government, Politics, & Global Studies
Deirdre Meldrum, Dean, ASU Fulton Schools of Engineering
Clark A. Miller, Associate Professor, ASU School of Government, Politics, & Global Studies
Dietram Scheufele, Professor, Journalism and Mass Communication, and Life Sciences, University of Wisconsin-Madison
Jan Youtie, Manager, Policy Services, Georgia Institute of Technology

ii. Board of Visitors

Lawrence Bell, Sr. Vice President, Strategic Initiatives, Museum of Science Boston
Edward Cupoli, Professor Emeritus, State University of New York at Albany
Heather Douglas, Associate Professor/Chair, Department of Philosophy, University of Waterloo
William Hallman, Director, Food Policy Institute, Rutgers University
Kristen Kulinowski, Policy Researcher, Science & Technology Policy Institute
Jennifer Kuzma, Associate Professor, Humphrey School of Public Affairs, University of Minnesota
Andrew Maynard, Director, Risk Science Center, University of Michigan
Colin Milburn, Associate Professor, English & Science & Tech. Studies, University of California, Davis
Albert Teich, Research Professor, Center for International Science & Technology Policy, George Washington University

iii. Nanotechnology Industry Liaison Committee

Gary Bild
Larry Bock, Chairman, Luxe Ventures
Ellen Feigal, Director of Medical Devices and Imaging, TGen
Douglas Goodman
Herb Goronkin
John Hughes
Anil Jain, Professor, Department of Computer Science & Engineering, Michigan State University
Donna Kent, Senior Vice President of Global Studies, Televerde
Anatoli Korkin, Director, ASU Office of Research and Economic Affairs
John McGarity
Michael Moffitt, Professor, Department of Computer Science and Engineering, University of Michigan
Sean Murdock, Nanotechnology Industry Association
Fred Weber

iv. Private Sector Engagement Committee

Larry Bell, Senior Vice President, Strategic Initiatives, Museum of Science
Lynn Bergeson, Owner, Bergeson & Campbell, P.C.
Susan Brienza, Attorney, Ryley Carlock & Applewhite
Kurt Creager, Executive Director, Stardust Center for Affordable Homes and the Family.
Jake Dunagan, Research Director, Technology Horizons Program, Institute for the Future
Erik Fisher, Assistant Professor, School of Government, Politics and Global Studies, Arizona State University

Jason Gallo, Science and Technology Policy Analyst, Science and Technology Policy Institute
Stephen Goodnick, Professor, Ira A. Fulton School of Engineering, Arizona State University
David Guston, Professor, School of Government, Politics and Global Studies, Arizona State University
Patti D. Hill, Founder, Penman Public Relations
Frederick Klaessig, Manager, Pennsylvania Bio Nano Systems
Celia Merzbacher,Vice President, Innovative Partnerships, Semi-Conductor Research Corporation
Evan Michelson, Associate Director, The Rockefeller Foundation
Robert Ott, Associate Director, Occupational Health and Safety, Arizona State University
Rax Raimond, Senior Mediator and Program Manager, Meridian Institute
David Roessner, Senior Fellow, Center for Science, Technology, and Economic Development, SRI International
Dietram Scheufele, Professor, Journalism and Mass Communication, and Life Sciences, University of Wisconsin-Madison
Cynthia Selin, Assistant Professor, Center for Nanotechnology in Society, Arizona State University
Philip Shapira, Professor, School of Public Policy, Georgia Institute of Technology; Professor of Innovation Management and Policy, Manchester Institute for Innovation Research, University of Manchester
Ahmad Soueid, Principal and Senior Vice President, HDR Architecture, Inc.
Arnim Wiek, Assistant Professor, School of Sustainability, Arizona State University
Peter Yeadon, Co-founder, Decker Yeadon
Jan Youtie, Manager, Policy Services, Georgia Institute of Technology
Steven Zylstra, President & CEO, Arizona Technology Council

v. Expert and Oversight Panel for National Citizens' Technology Forum

Stephen Helms Tillery, Assistant Professor, Harrington Department of Bioengineering; Assistant Professor of Kinesiology, Arizona State University
Kristen Kulinowski, Policy Researcher, Science & Technology Policy Institute
Maxwell J. Mehlman, Arthur E. Petersilge Professor of Law; Professor of Bioethics, School of Medicine; Director of the Law-Medicine Center, Case Western Reserve University
Jason S. Robert, Associate Professor, Department of Basic Medical Sciences, The University of Arizona College of Medicine; Associate Professor, School of Life Sciences, Arizona State University
Ida Andersen, Danish Board of Technology
David Rejeski, Director, Project on Emerging Nanotechnologies, Woodrow Wilson International Center for Scholars

4. (c) LIST OF PARTICIPATING INSTITUTIONS

i. ASU Academic Participating Institutions

Applied Learning Technologies Institute
Arizona Institute for Nano-Electronics (AINE)
Arizona Technology Enterprises (AzTE)
Axon Technologies
Barrett, the Honors College
Biodesign Institute
Center for Biology & Society
Center for Research on Education in Science, Mathematics, Engineering, & Technology (CRESMET)
Center for the Study of Religion & Conflict
Center for Law, Science and Innovation
Center for Science and the Imagination
Center for Solid State Electronics Research
Center for Study of Institutional Diversity
College of Liberal Arts & Sciences
College of Public Programs
College of Technology & Innovation
Complex Adaptive Systems Initiative
Consortium for Science, Policy & Outcomes
Cyberinfrastructure Services
Decision Theater for a Desert City
Foundation, ASU
Global Institute of Sustainability
Graduate College
Hayden Library
Health Services
Herberger Institute for Design & the Arts
Hispanic Research Center
Institute of Human Origin
Ira A. Fulton Schools of Engineering
Learning Sciences Institute
LightWorks
Mary Lou Fulton College of Education
New Interdisciplinary Arts & Sciences
Office of China Initiatives and Strategy
Office of Knowledge and Enterprise Development (OKED)
Office of Public Affairs
Office of the President
Office of the Vice President and Provost
Office of University Initiatives
Occupational Health and Safety
Phoenix Urban Research Laboratory
Responsible Conduct of Research Program, School of Life Sciences
Sandra Day O’Connor School of Law
School of Earth & Space Exploration
School of Government, Politics, & Global Studies
School of Human Evolution & Social Change
School of International Languages & Cultures

School of Letters & Sciences
School of Life Sciences
School of Mathematical & Statistical Sciences
School of Philosophical, Historical, and Religious Studies
School of Social Transformation
School of Sustainability
Science Policy Assessment & Research on Climate (SPARC)
Stardust Center
Technology Based Learning Research
Transformative Healthcare Networks
University Art Museum
University Public Schools
W.P. Carey School of Business
Walter Cronkite School of Journalism & Mass Communication

ii. Academic Participating Institutions Other than at ASU

Aarhus University, Denmark
Ansal Institute of Technology
Antwerp University
Austrian Academy of Science
Baylor College of Medicine
Beijing Institute of Technology, China
Bioscience High School
Boise State University
Bowling Green State University
Brown University
California State University, Sacramento
Cardiff University
Carnegie Mellon University
Case Western Reserve University
Chandler Gilbert Community College
Chinese Academy of Sciences
Claremont Graduate University
Clark University
Collins College
Colorado School of Mines
Columbia College Chicago
Columbia University
Concordia University
Copenhagen Business School, Denmark
Corinthian Colleges
Cornell University
Dalian University of Technology, China
Delft University of Technology
DeVry University
Dublin City University
Durham University, United Kingdom
Ecole des Mines, France
ETH Zurich
Eugene Lang College the New School for Liberal Arts

Ewha Women’s University
Federal University of Parana, Brazil
Federal University of Santa Catarina, Brazil
Flemish Institute of Science & Technology
Florida International University
George Mason University
George Washington University
Georgetown University
Georgia Institute of Technology
Glendale Community College
Grenoble Institute of Technology
Grove City College
Harvard University
Howard University
Illinois Institute of Technology
Indiana University
Institute of International Sociology of Gorizia
Institut d’Etudes Politiques de Grenoble, France
Iowa State University
James Martin Institute for Science & Civilization, Oxford University, UK
Johns Hopkins University
Karlsruhe Institute of Technology
Keele University
Korea Institute of Science and Technology, Seoul, Korea
Lancaster University, UK
Leeds University Business School, UK
Lehigh University
Litchfield Elementary School District
Long Island University
Macalester College
Manchester Business School
Maricopa Community Colleges
McGill University
Mesa Biotech Academy
Mesa Community College
Mesa High School
Michigan State University
MIT SENSEable City Lab
Montana State University
Nagoya University, Japan
National Academy of Sciences
National University of Singapore & Asia
New York University
North Carolina State University
Northeastern University
Northern Alberta Institute of Technology
Northwestern University
Norwegian University of Science & Technology, Norway
NSEC/CNS-University of California, Santa Barbara (UCSB)
Ohio State University
Osaka University, Japan

Pennsylvania State University
Plymouth University
Portland State University
Purdue University
Queens University
Radboud University
Rensselaer Polytechnic Institute
Rhode Island School of Design
Rice University
Rice University/ICON
Rio Salado College
Rochester Institute of Technology
Roger L. Putnam Vocational Technical Academy
Rutgers, The State University of New Jersey
RWTH Aachen University
Said Business School, Oxford
Sapienza University of Rome
Scottsdale Community College
Simon Fraser University, British Columbia
S.I.W.S. N.R. Swamy College, India
South Mountain Community College
Stanford University
State University of Campinas
Stony Brook University
Tamkang University
Technical University of Delft
Technical University of Denmark
Technical University of Darmstadt
Tennessee State University
Texas State University, San Marcos
The Center for International Development, Harvard University
Tokyo University
Tsinghua University, China
UCLA/Harvard/NBER: Collaborative Research; Personnel Exchanges
UMC St. Radboud
Unicamp University, Brazil
Universidad de Zacatecas, Mexico
Universidad del Pais Vasco, Spain
Universita Ca’ Foscari Venezia
University College London
University at Albany
University of Alberta
University of Amsterdam
University of Antwerp, Belgium
University of Arizona
University of Athens
University of Basel
University of Basque Country
University of Bergen, Norway
University of Bielefeld, Germany
University of British Columbia

University of Calgary, Canada
University of California, Berkeley
University of California, Davis
University of California, Irvine
University of California, Los Angeles
University of California, San Diego
University of California, Santa Barbara
University of Cape Town
University of Central Florida
University of Chicago
University of Colorado, Boulder
University of Colorado, Denver
University of Copenhagen
University of Denver
University of Edinburgh
University of Exeter, United Kingdom
University of Florida
University of Geneva
University of Georgia
University of Gothenburg, Sweden
University of Groningen, Netherlands
University of Illinois, Chicago
University of Illinois, Springfield
University of Illinois, Urbana-Champaign
University of Iowa
University of Jiangsu, China
University of Lausanne, Switzerland
University of Leeds
University of Liege, Belgium
University of Manchester, United Kingdom
University of Maryland
University of Massachusetts, Amherst
University of Melbourne, Australia
University of Michigan
University of Minnesota
University of Montana
University of Nebraska, Lincoln
University of Nevada, Las Vegas
University of New Hampshire
University of New South Wales, Australia
University of North Carolina, Chapel Hill
University of North Carolina, Charlotte
University of North Texas
University of Notre Dame
University of Nottingham
University of Oslo
University of Oxford
University of Padua
University of Seville, Spain
University of South Carolina
University of South Florida

University of Southern California
University of Southern Indiana
University of Sussex, United Kingdom
University of Tennessee, Knoxville
University of Texas, Austin
University of Trieste, Italy
University of Twente, the Netherlands
University of Turku
University of Utah
University of Victoria
University of Vienna
University of Virginia
University of Washington
University of Waterloo
University of Wisconsin, Madison
UT-Battelle
Utrecht University
Vanderbilt University
Villanova University
Virginia Polytechnic Institute & State University
Virginia Tech University
VU University of Amsterdam
Washington University, Saint Louis
West Chester University of Pennsylvania
Western Michigan University
Yale University
York University

4. (d) Non-Academic Participating Institutions

Agilent Technologies
Airplayn
Alberta Centre for Advanced Micro Nano Technology Products
Alberta Innovates Technology Futures
ALD Nano Solutions
Alsek Research
American Association for the Advancement of Science (AAAS)
American Bar Foundation
Apriva ISS
Arizona Bioindustry Organization
Arizona Commerce Authority
Arizona Corporation Commission
Arizona Department of Education
Arizona Department of Health Services
Arizona Nanotechnology Cluster
Arizona Public Service (APS)
Arizona Research Institute for Solar Energy
Arizona Science Center
Arizona Technology Council
Army Military Command
Australian Government
Bank of America
Bassetti Foundation
Bioindustry Organization of Southern Arizona
Boudreaux and Associates
BrasEq
Brilliant Concepts LLC.
British Embassy
Brookings Institute
Buckeye Express
Burton Barr Central Library
Cambridge Public Health Department
Carnegie Mellon
CB Richard Ellis
CEA-Saclay
Cell Publishing
Center for Business Models in Health Care
Center for Naval Analysis
Center for Responsible Nanotechnology
Changeist, LLC.
Chemical Heritage Foundation
Children's Museum of Phoenix
City of Apache Junction
City of Edmonton
City of Phoenix
City of Scottsdale
Complex Global Risks
Corgan Associates
Council of Scientific and Industrial Research

Danish Board of Technology
David Crowley Gallery
Decker Yeadon LLC
Denise Meridith Consultants, Inc.
Department of Energy (DOE)
Department of the Treasury
Department of Transportation
Depave
Describe, LLC.
Desert Botanical Garden
Digital Thinking Network
Downtown Phoenix Journal
Ecological Society of America
EKLATEK Engineering
E.L. Smith Water Treatment Plant
Emerging Leaders in Science & Society (ELISS)
Engineering & Physical Sciences Research Council (EPSRC)
Environmental Protection Agency (EPA)
Equus Development Corporation
Eureka
European Commission
Exploratorium, San Francisco
Federal Aviation Administration Office of Environment & Energy
FBI Weapons of Mass Destruction
Food and Drug Administration (FDA)
Foundation for Genomics and Population Health
Gallagher and Kennedy
General Dynamics
Genøk Centre for Biosafety
Genome British Columbia
German Parliament
Global Business Network
Gould Evans
Gordon Research Conferences
Greenwall Foundation
Ground Work Portland
HafenCity University
HDR Architecture
Heatsync Labs
Heliae
Home Depot
Iconic Architecture
Ikologi
INSERM
Institute for Agriculture and Trade Policy
Institute for Ecological Economy Research, Germany
Institute for the Future
Institute of Technical Assessment & Systems Analysis
Intel
Intelligent Information Services Corporation (IISC)
International Nanotechnology in Society Network (INSN)

International Research Center
Ira Domsky Environmental
Italian National Research Council, Turin, Italy
ITel
Ivy Consulting, Inc.
Jennings, Strouss, & Salmon PLC
Kaiser Permanente
Kolbe Corp.
Kristine Wilcox Consulting
Las Vegas-Clark County Library District
Lasertel, Inc.
Lawrence Livermore Lab
Leathers Milligan & Associates
Loka Institute
London Science Museum
Luxe Ventures
Lyman and Merrie Wood Museum of Springfield History
Mabelson Law Group
Mapping & Planning Support (M.A.P.S.) Alberta Capital Region
Max Chandler Robot Art
Mayer-Reed Architects
Mayo Clinic - Scottsdale
Meridian Institute
Metacurrency Project
Microchip
MJS Designs, Inc.
Modern Insights
Museum of Life & Science, North Carolina
Museum of Science, Boston
Nano-Alberta
Nanoscale Informal Science Education Network (NISENet)
National Academy of Engineering
National Advisory Committee on Aeronautics (NASA)
National Building Museum
National Business Museum
National Geographic Society
National Institute of Nanotechnology
National Institute of Standards and Technology (NIST)
National Institutes of Health (NIH)
National Nanomanufacturing Network (NNN)
National Nanotechnology Coordinating Office
National Nanotechnology Infrastructure Network
National Research Council
National Research Council of Canada
National Science Foundation
Nature.com
Nature Publishing Group
New Haven Independent
Norwegian Institute
Nothing but NET
NRG Energy, Inc.

Nuclear Waste Review Board
Office of Naval Research
Oregon Museum of Science & Industry (OMSI)
PACeHR
Penman PR
Pennsylvania Bio Nano Systems, LLC.
Phoenix Public Library
Phoenix Rising
Phoenix Spokes People
Phoenix Zoo
Physician Services Group
PING Inc.
Pioneer Valley Transit Authority
Planetary ONE
Portland Bureau of Environmental Services
Practical Action
Presidential Commission for the Study of Bioethical Issues
Quantiam Technologies Inc.
QuantTera
Rathenau Institute
RCI Surveys, Inc.
Research Center Berlin
Research Council of Norway
Research Councils U.K. (RCUK) in the U.S.
Re/Max Fine Properties
Research Media Ltd.
Richard + Bauer Architecture
Rockefeller Foundation
Rose Community Development Corporation
Rutgers and Posch
Ryley, Carlock & Applewhite Attorneys
Salt River Project
Sandia National Laboratory
Savage Film
Science and Technology Institute
Sciencenter, New York
Science Foundation Arizona
Science Museum of Minnesota
SciStarter
SciTech Strategies, Inc.
Scottsdale League for the Arts
Search Technology
Semi-Conductor Research Corporation
SETI Institute
Shannon and Wilson, Inc.
SmithGroup
Snell and Wilmer Law
Social Sciences and Humanities Research Council of Canada
Sokolov, Sokolov, Burgess Solutions (SSB)
South of Market EcoDistrict
Spirit of the Senses Salon

Springer Publishing
SRI International
Startup Edmonton
Strategic Advantage, Inc.
Sundt Construction, Inc.
Synthetic Biology Engineering Research Ctr. (SynBERC)
SySTEM Schools, Inc.
Targeted Genetics Corporation (TGen)
Teach America
TEC Edmonton
Televerde
Telus World of Science
Tempe Festival of the Arts
Testani Design Troupe, Inc.
The Elumenati, LLC
The Embryo Project
The Energy and Resources Institute
The Foresight Institute
The Galaxy Organization
The Geek Group of Western Massachusetts
The Rockefeller Foundation
The Royal Society
The Washington Post
Town Hall Education Arts Recreation Campus
Translational Genomics Research Institute (TGEN)
TraskBritt Intellectual
TRIMET Transportation
Underwood Bros., Inc.
Unicorn Media, Inc.
U.S. Government Accountability Office (U.S. GAO)
U.S. Green Building Council
U.S. Department of Agriculture
U.S. Department of Homeland Security
U.S. Department of Transportation
U.S. DOE/Center for Integrated Nanotechnology (CINT)
Venezuelan Institute for Scientific Research
Western Massachusetts Electric Company
Will Bruder & Partners Ltd.
Winnipeg Art Gallery
Woodrow Wilson International Center for Scholars

5. Quantifiable Outputs

Table 1: Quantifiable Outputs - NSF Award #0937591

Outputs	Reporting Year -1 2010-2011	Reporting Year-2 2011-2012	Reporting Year-3 2012-2013	Reporting Year-4 2013-2014	Reporting Year 5 2014-2015	Total
Publications resulted from NSEC Support						
in Peer Reviewed Journal	19	39	43	38		139
in Peer Reviewed Conference Proceedings	0	0	0	0		0
in Peer Reviewed Book Chapters	9	18	29	6		62
Technical Reports	7	7	3	1		18
Working Papers	7	2	2	3		14
Books	4	2	2	0		8
Theses	9	8	3	2		22
in Trade Journals	3	0	1	1		5
Other Journal Publications	2	6	5	2		15
Internet	17	11	16	10		54
with Multiple Authors	36	43	73	47		199
co-authored with NSEC faculty	34	43	72	11		160
NSEC Technology Transfer						
Inventions Disclosed	0	3	3	3		9
Patents Filed	0	0	0	0		0
Patents Awarded	0	0	0	0		0
Software Licensed	0	0	0	0		0
Spin-off Companies Started	0	0	0	0		0
Degrees to NSEC Students						
Bachelors Degrees Granted	14	8	12	12		46
Masters Degrees Granted	12	11	9	10		42
Doctoral Degrees Granted	14	10	5	5		34
NSEC Graduates Hired by						
Industry	12	15	3	10		40
NSEC participating Firms	0	0	0	0		0
Other US Firms	12	15	3	0		30
Government	3	2	2	0		7
Academic Institutions	15	12	3	4		34
Other	0	0	0	0		0
Unknown	10	0	18	13		41
NSEC Influence on Curriculum						
New Courses Based on NSEC Research	4	7	1	1		13
Courses Modified to Include NSEC Research	0	0	0	2		2
New Textbooks Based on NSEC Research	0	0	0	0		0
Free-standing Course Modules or Instructional CDs	0	0	0	0		0
New Full Degree Programs	1	0	0	0		1
New Certificate	0	0	2	1		3
Information Dissemation/Educational Outreach						
Workshops, Short Courses to Industry	0	3	8	0		11
Workshops, Short Courses to Others	5	9	3	5		22
Seminars, Colloquia, etc.	112	141	121	96		470
World Wide Web courses	1	0	0	1		2
Academic Presentations	60	86	74	61		281
Industry Presentations	18	27	12	15		72
Science Cafes	7	8	6	6		27
Visiting Speakers	17	5	6	2		30
Community Speaking Engagements	4	3	12	6		25
Newsletters	0	0	0	0		0

6. Mission, Significant Advances, and Broader Impacts

The Center's mission is to: 1) *research* the societal dimensions of nanoscale science and engineering (NSE); 2) *train* a community of scholars with new insight into these dimensions; 3) *engage* various publics and NSE researchers in dialogues about the goals and implications of NSE; and 4) *partner* with the NSE enterprise to generate greater *reflexiveness* in research, development, education and policy. Using the methods of real-time technology assessment (RTTA; Guston and Sarewitz 2002), CNS-ASU weaves together these activities to support a broad-based societal capacity for the *anticipatory governance* of emerging technologies.

The Center has made significant strides in accomplishing this mission. In particular, the Center's RTTA methods and its anticipatory governance vision have been recognized in important scholarly venues, e.g., the field-defining *Handbook of Science and Technology Studies*, which includes Barben et al.'s (2008) chapter, and the series on innovation policy in *Nature*, which published Guston's (2008) commentary. The Center's work also includes a more detailed genealogy of anticipatory governance (Karinen and Guston 2010), a synoptic piece placing anticipatory governance in the NNI's approach to responsible development and in the context of some recent scholarly debate (Guston 2014), and a historical exploration of a critical case in anticipation of the atomic bomb (Guston 2012). A forthcoming submission of a special issue (edited by Barben and Guston) on reflexive and anticipatory governance to *Social Studies of Science* delves deeper into the constituent capacities anticipatory governance. Beyond such publications, a number of programs and scholars have begun to adopt anticipatory governance and scrutinize it for their own purposes, from the incorporation of anticipatory governance into the programmatic agenda of the Nano-scale Informal Science Education Network's (NISE Net) public forums (see **Section 12 Outreach and Knowledge Transfer**), to the work of a cadre of international scholars and practitioners who have visited CNS-ASU to imbibe its perspective (see **Section 13 Shared and Other Experimental Facilities** [**International Collaborations**]), to sessions at the annual meetings of the AAAS Science and Technology Policy Forum (May 09), the Society for the Study of Nanoscience and Emerging Technologies (annually since 09) and the Society for Social Studies of Science of Science (F 09; F 10) dedicated to anticipatory governance, and elsewhere. Emerging dialogue and policy around responsible innovation (RI) also owes much to the emphasis on RI and anticipatory governance as well, as RI frameworks adopted, for example, by the UK Engineering and Physical Sciences Research Council show significant intellectual inheritances from anticipatory governance.

Moreover, anticipatory governance and its component capacities are represented in NNI and other official planning documents, including: endorsement of scenario development as a route to understanding nanotechnological futures, in the NNI 2007 strategic plan; highlighting of integration research as an important element in future NSE collaborations with social science, in the FY 2012 NNI budget summary from NSF; focusing importantly on anticipatory governance in the 2010 NSF/WTEC report on the future of nanotechnology; etc. Guston (2014) has begun to collect many of these responses in the community and respond to some critics that have emerged, and the funded supplement to CNS-ASU has begun to research the Center's various impacts and outcomes, including the uptake of anticipatory governance.

CNS-ASU research is having a substantial influence on the scholarly literature. The *Yearbook of Nanotechnology in Society* series (Springer; Guston, series editor) has published three volumes (Fisher, Selin and Wetmore 2008; Cozzens and Wetmore 2011; and Hays, Robert, Miller and Bennett 2013). A fourth is well underway, with draft chapters from most authors in various stages of peer review (de Ridder Vignone, Miller and Barben in preparation 2014). The two-volume *Encyclopedia of Nanoscience and Society* (Sage; Guston, editor) was published in 2010. Both the

Yearbooks and the *Encyclopedia* serve community-forging purposes. The *Yearbook* helps create a community of scholars around a narrow topic and then provides them with relatively high visibility. The *Encyclopedia* has brought together a larger community of scholars in its production – roughly 220 authors – and will help introduce a younger scholarly audience – high school and undergraduate students – to nearly 500 topics in nanotechnology in society. In total, Center researchers have 11 books published, under review or under contract around Center-related material, five of which are primary CNS publications.

The Center's researchers have published, had accepted or submitted for review 222 peer-reviewed journal articles (175 of which are primary CNS-supported publications), covering a range of outlets including:

- broad-based audiences in science and technology studies (e.g., *Science, Technology & Human Values*; *Science as Culture*; *Minerva*; *Social Studies of Science*),
- policy and innovation studies (e.g., *Science and Public Policy*; *Research Policy*; *Journal of Technology Transfer*, *Technological Forecasting & Social Change*, *Review of Policy Research*, *Research Evaluation*; *Scientometrics*),
- law and ethics (*Science and Engineering Ethics*; *Journal of Law, Medicine, and Ethics*, *Jurimetrics*),
- communication (*Science Communication*; *Journal of Mass Communication Quarterly*; *Public Understanding of Science*; *New Media and Society*, *International Journal of Public Opinion Research*),
- urban sustainability issues (*Cities*; *Journal of Urban Technology*, *Sustainability Science*),
- other interdisciplinary specialty journals (*Leonardo*; *Appetite*; *Long-range Planning*; *China Intellectual Property*), and
- specific, NSE-related audiences for
  - scientists (*Journal of Nanoparticle Research*; *Nature Nanotechnology*; *Journal of NanoScience and Nanotechnology*),
  - policy makers and business leades (*Nanotechnology Law and Business*),
  - social scientists and humanists (*NanoEthics*) and
  - educators (*Journal of Nanotechnology Education*).

In the recent year, we have also added *Proceedings of the National Academy of Sciences* to the journals in which CNS-ASU researchers have published.

The Center's researchers have produced six special issues of peer-reviewed journals:

- Fisher, *Science and Engineering Ethics* 17(4), "Public Science and Technology Scholars"
- Bozeman and Sarewitz, *Minerva* 49(1) "Public Value Mapping"
- Shapira and Youtie, *Journal of Technology Transfer* 36(6) "Nanotechnology and Innovation Policy
- Guston, *Review of Policy Research* 30(5) "Nanotechnology and Political Science"
- Invernizzi and Davies, *Journal of Nanotechnology Law and Business* 9(3) "Studying Nanotechnology in the Private Sector" and
- Selin and Pereira*, International Journal of Foresight and Innovation Policy* 9(2,3,4) "Conceptual and Methodological Dimensions of Plausibility.

They are at work on two additional special issues:

- Barben and Guston, *Social Studies of Science* and
- Selin, *Futures*.

Perhaps more importantly, Center faculty have assumed major leadership roles in the creation of the new *Journal of Responsible Innovation*. Launched by Taylor & Francis in early 2014, Guston is the founding editor-in-chief and Fisher is one of the associate editors.

The Center has 31 non-peer-reviewed publications in trade journals and other journals, including commentaries by Brossard and Scheufele (2013) in *Science*, Guston in *Nature* (2008) and in *People & Science* (2009), Shapira and Wang (2010) in *Nature*, Scheufele and Corley in *The Scientist* (2010), and Wetmore and Posner in *NanoToday*.

Center researchers have further published or have forthcoming 87 book chapters (71 of which are primary CNS-supported publications), including three contributions to the field-defining *Handbook of Science and Technology Studies*, many contributions to the *Yearbooks* and other new nano-in-society anthologies, and major international works on interdisciplinarity, governance, risk, and innovation policy and assessment. The *Encyclopedia of Nanoscience and Society* also drew on the expertise of Center-affiliated researchers for 59 entries, or about 12% of the total number, which are listed under "Other."

Although they are a somewhat crude measure of scholarly impact, citations to this body of published work are accumulating – more than 4900 citations as documented in Google Scholar (as of Apr 14), up from roughly 3300 citations in Apr 13, just over 1500 citations in Mar 12, 983 citations in Mar 11, roughly 500 citations in Apr 10, and 188 citations in Apr 09. The Center's H-index has risen to 38 from 28 last year, 21 in 2012 and 19 in 2011 (indicating precisely 38 publications with 38 or more citations each). (This total does not include the roughly 85% of the 380 Google Scholar citations to the original RTTA article by Guston and Sarewitz [2002] that have occurred since CNS-ASU was founded and which represent the visibility of the Center and its core intellectual ideas as well. It also excludes some publications that do not appear accessible on Google Scholar, as well as citations to *Yearbook* chapters not written by CNS researchers or individual *Encyclopedia* entries whether or not written by CNS researchers.) Particularly pleasing about the H-index publications is their inclusion of work from almost all of the research thrusts and intellectual perspectives of the Center. H-indexed papers account for about 3000, or 61%, of the Center's citations.[1]

CNS-ASU has also attempted to make its research and other products available in other formats, including 35 reports of various types available on the Internet and numerous video and audio clips available through the CNS website, YouTube, and other organized blogs.

As evidence of its impact on education, the Center has primarily contributed to the completion of 42 student theses, including 17 doctoral theses, 3 master's theses, and 22 undergraduate honors theses, across a variety of disciplines. CNS has contributed to the completion of an additional 25 student theses, including undergraduate honors students, STIR collaborators, CNS-Biodesign fellows and others completing the PhD+. These numbers include only a handful of roughly one dozen doctoral students whose research is formally being guided by the STIR project, as well as

[1] RTTA 1 colleagues have performed a bibliometric analysis of CNS-ASU publications using combined Web of Science and Scopus data and returned similar results, finding 4038 citations in early 2014 compared to 2917 the previous year, and an H-index of 36, accounting for 54% of CNS citations. They also found that citations to CNS-ASU publications accounted for ~40% of all citations to nano social science papers through early 2014. They have further found that mean citation rate for CNS-ASU papers is higher than for non-CNS-ASU papers, and that this difference increased between 2013 (9.86 > 6.10) and 2014 (13.09 > 7.43).

additional students who have become affiliated with that project but are not formally part of it and other students advised by Center faculty outside CNS-ASU on related topics.

Data and instruments produced by CNS-ASU are sought by and shared with an increasing number of researchers across the globe. For example, the searchable definition of nanotechnology produced by RTTA 1 has been adopted by the European Nano Observatory. The public opinion survey instrument developed by RTTA 2 was not only developed in coordination with EuroBarometer but also has been shared with researchers in Singapore, Ireland, France, and Poland. Survey data has also been provided to policy officials, including the National Nanotechnology Communication Office. NCTF data have been used not only by the distributed groups of scholars who hosted local citizens' technology forums, but have also been provided at the request of researchers at NYU and in France. In Feb 12, CNS-ASU collaborated with librarians at UMass Amherst in submitting a $48K proposal to Institute for Museum and Library Services for a planning activity, "Nanoscience and Emerging Technologies in Society: Sharing Research and Learning Tools," which occurred in June 13.

Center activities have also helped generate additional research projects, including approximately $5.5M of associated and spin-off awards at ASU and roughly $3.4M at the collaborating universities. At ASU, these awards include:

- Boradkar, et al., National Collegiate Inventors and Innovators Alliance, $30K, Sep 07 – May 08 (this award supported one year of InnovationSpace on CNS agenda);
- Sarewitz and Bozeman, NSF SciSIP, $203K, Oct 07 – Sep 10, Public Value Mapping: Developing a Non-Economic Model of the Social Value of Science and Innovation Policy (this award included collaborations with TRC 1 and RTTA 4);
- Sarewitz and Fisher, NSF SciSIP, $35K, Aug 10-Sep 10, How to STIR Public Values for Policy Making: A Supplemental Proposal for Web-based Dissemination of Two SciSIP Projects (a supplement to the PVM award above, this award extended outreach and dissemination via video for both PVM and STIR projects across RTTA 1 and RTTA 4);
- Herkert, Wetmore, et al., NSF Ethics Education in Science and Engineering, $300K, Jan 08 – Dec 10 (this award tested a number of macro-ethics education interventions, several initially piloted by CNS-ASU);
- Guston, NSF Conference Award for the Gordon Research Conference, $60K, Aug 08 (this award supported the GRC on "Governing Emerging Technologies");
- Guston, Greenwall Foundation Conference Award for the Gordon Research Conference, $10K, Aug 08 (this award supported the GRC on "Governing Emerging Technologies");
- Fisher and Guston, NSF Socio-Technical Integration and Research, $540K, Apr 09-Mar 12 (this award extends the RTTA 4 agenda to create an international team of doctoral students doing interventionist-oriented comparative laboratory ethnographies);
- Fisher, National Nanotechnology Infrastructure Network, 09-10, $5,300 (this award documents the integration of social and ethical considerations into a number of NSEC and NNIN sites);
- Corley, Marchant and Sylvester, DOE, $245K, Sep 10-Aug 12, Governing Nanotechnology Risks and Benefits in the Transition to Regulation: Innovative Public and Private Approaches (this award draws on and extends Corley's RTTA 2 work);
- Corley, Lincoln Center for Applied Ethics, ASU, $20K, May 10 – Dec 11, An Exploration of the Ethical Implications of Human Exposure to Nano-Materials in University Research Laboratories (this award draws on and extends Corley's RTTA 2 work);
- Selin, Science Museum Minnesota, $9K, Sep 11-Dec 11, Civic Scenarios on Climate Change Adaptation (this award extends Selin's RTTA 3 research and outreach);
- Wiek, Housing and Urban Development, $2.9M, Reinvent Phoenix: Cultivating Equity,

Engagement, Economic Development and Design Excellence with Transit-Oriented Development (continues TRC 2 work to address socio-technical change as a key aspect of sustainability transition research);

- Guston, NSF, Workshop on Anticipatory Governance of Complex, Engineered Nanomaterials, $34K (to apply anticipatory governance framework to advanced generation nanomaterials);
- Graduate students Foley and Kalinowski, $2K, ASU Graduates in Integrative Society and Environment Research on "Future Visions at M52: Investigating Social, Ethical, and Legal Constraints;"
- Lobo et al. DOE, $98K, Sunshot Seed grant for "Forecasting and Influencing Technological Progress in Solar Energy;"
- Wender et al., $2K, ASU Graduates in Integrative Society and Environment Research on "Burdens and Barriers to Terrawatt-scale Photovoltaic Energy;"
- Seager, Selin et al., NSF NUE, $200K, Cross-disciplinary Education in the Social and Ethical Aspects of Nanotechnology, Nov 13 – Oct 15;
- Wetmore et al., NSF, $248K, Capacity Building in Computer Science as a Driver of Innovation, Oct 13 – Sept 15;
- Guston and Fisher, NSF, $500K, NSF SAVI: Virtual Institute for Responsible Innovation, Oct 13 – Sept 16; and
- Finn and Guston, NSF, $50K, Informal Learning and Scholarship in Science and Society: A Multi-disciplinary Workshop on Scientific Creativity and Social Responsibility, Mar 14 – Feb 15.

At GA Tech, these awards include:

- Porter, NSF National Partnership for Managing Upstream Innovation, $45K, Nov 04 – present;
- Shapira, Youtie, Rogers, NSF Measurement and Analysis of Highly Creative Research, $340K, Jan 08 – Dec 10;
- Porter et al., NSF Measuring and Tracking Research Knowledge Integration $393K, Sep 08 – Aug 11;
- Porter et al., NSF NER: Representations of Active Nanostructures Across Scientific, Popular, and Policy Realms of Discourse, $85K, Jan 07 – Aug 09;
- Porter et al., UK Royal Commission, $20K, Jan 08 – Apr 08;
- Porter, Youtie and Meyers, Euronano, $21K, Jul 07 – Jan 08;
- Fernandez-Ribas, Kauffman and GA Research Alliance, Small Businesses International Nano Patent Strategies, $16K, Jun 08 – May 09;
- Randles, Shapira, et al. National Research Council of Canada, UK Nanoclusters, $40K, Jan 09 – Apr 09;
- Rogers, Youtie, Porter, Shapira, NSF Assessment of Nanoscale Science and Engineering Systems, $200K, Oct 09 – Sep 10;
- Shapira, Tang, Meng. Chemical Heritage Foundation, Development of Advanced Materials in China: Case Studies of Nanotechnology Materials Innovations, $10K, Sep 09 – Aug 11;
- Shapira, Youtie. National Nanotechnology Infrastructure Network, Social and Ethical Issues Seed Grant Competition, 2010, Nanotechnology's Transition from Discovery to Commercialization in Small and Medium-sized Enterprises: An Exploration of Evidence from Novel Unstructured Sources, $19,712, May 10 – April 11;
- Porter et al., NSF SciSIP, TLS: Revealing Innovation Pathways, April 2011- Jan 2014, $419k,
- Shapira, et al., UK Economic and Social Research Council, Emerging Technologies, Trajectories and Implications of Next Generation Innovation Systems Development in China and Russia $350k, Sep 2012-Sep 2014;
- Arora, Georgia Tech Research and Innovation Conference, $1.5K, Feb 12;

- Shapira, UNIMAN, Nesta, "Mapping innovation and growth in a strategic emerging technology: New data sources and methods for tracking graphene research and innovation," $75K, 2013-2014;
- Shapira (with Gok, PI), Novel data analysis, synthetic biology. $12K, 2014; and
- Shapira, Youtie, et al., EU-SPRI, Manchester Summer School on Emerging Technologies, $20K 2014.

At Wisconsin, these awards include:

- Scheufele, University of Wisconsin—Madison Graduate School, Science and Social Responsibility: Tapping Values and Perceptions among Researchers in Nanotechnology, $9,029, Sp 07;
- Scheufele, NSF, Media, Talk, and Trust: The Social Amplification of Risk during Site Selection for a Bio-research Facility, $400K, Sep 08- Oct 10;
- Scheufele (co-PI with PI Berube at NCSU), NIRT: Intuitive Toxicology and Public Engagement, $1.4M ($150K at UW), Sep 08- Oct 10;
- Scheufele (consultant with PI Hallman at Rutgers), USDA CSREES National Research Initiative (NRI) Food Nanotechnology: Understanding the Parameters of Consumer Acceptance, $200K, Sep 08- Oct 10;
- Scheufele (with PI Wilson), DOE, Developing a User Experience for the Next Generation Nuclear Fuel Cycle Simulator, $1.2M, Sep 11-Oct 14;
- Scheufele (sub-PI with PI's Larry Bell, Paul Martin & Robert J. Semper), NSF, Nanoscale Informal Science Education Network Award # DRL-0940143 $160K (total center grant: $4.2 million) 2011-2015; and
- Scheufele, Summer Online Course Development Award: Science, Media and Society, $25,627, 2013-15.

CNS-ASU has been a force for institutional change at ASU and its collaborating universities. Programs have adopted CNS-ASU tools and approaches as well as the broader theme of anticipatory governance, which has emerged as an important element in the conceptualization of new ASU initiatives. In addition to having created numerous undergraduate and graduate courses and its PhD+, CNS-ASU has:

- collaborated with ASU's Biodesign Institute to require integrated societal training of the doctoral students in its Biological Design PhD program;
- collaborated with ASU's Professional Science Master's program in Nanoscience to offer a societal training course in the new curriculum;
- collaborated with ASU's Professional Science Master's program in Solar Energy Engineering and Commercialization to offer integrated societal training in the new curriculum;
- collaborated with ASU's NNIN node to develop a training program in the societal dimensions of nanotechnology and in informal science education for its users;
- helped instigate the creation of a PhD+ program at GA Tech;
- provided leverage for a proposal by Scheufele at Wisconsin for a "Science and Culture" cluster hire to add personnel to the infrastructure that CNS has supported there;
- collaborated with ASU's university-wide energy initiative, LightWorks, to integrate research on the social and governance challenges of energy systems transitions ; and
- collaborated with a number of proposals to NSF (STC, ERC, IGERT and NUE), DOE (ARPA-E and Hub) and NIH emerging from ASU containing programs that CNS pioneered. Funded NSE and emerging technology awards at ASU with CNS-ASU partnerships and activities include over $33M in awards:
  - Lindsay, NSF NIRT for organic photo-voltaics, $1.1M, Sep 06 – Aug 10;

- Posner, NSF CBER, Interaction of Engineered Nanomaterials with Artificial Cell Membranes, $313K, Sep 09 – Aug 12;
- Posner, NSF CBER, Collaborative Research: Rational Design of Enhanced Catalytic Nanomotors, $600K, Mar 09 – Feb 12;
- Phelan, NSF PSM, Professional Science Master's in Solar Energy Engineering and Commercialization, $700K, Jul 10 – Jun 13;
- Honsberg, NSF ERC, Quantum Energy and Sustainable Solar Technologies, $20M, Aug 11 – Jul 16;
- Panchanathan, NSF IGERT, Person-Centered Technologies and Practices for Persons with Disabilities, $3M, Aug 11 – Aug 16;
- Vermass, NSF IGERT, Solar Utilization Network, $3M, Jun 12 – May 17; and
- Westerhoff, NSF/EPA NCCLCs: Material Life Cycle of Nanomaterials, $5M, Sept 13-Aug 17.

Additionally, CNS-ASU researchers have the following associated or collaborative proposals that incorporate CNS ideas under review or in preparation:

- DuBois et al. (with Guston and Bennett), NIH, Broadening Experiences in Scientific Training (BEST): Cross-training in Biomedical Research: Business, Policy, Law, and Communications, $5M;
- Raupp (with Bennett and Wetmore), NSF ERC, Sensing and Processing via Autonomous Conformal Electronics Systems;
- Kavazanjian (with Bennett), NSF ERC Bio-mediated and Bio-Inspired Geotechnics;
- Guston, Murray and Brian, NSF, Workshop: Societal Aspects of Synthetic Biology, $150K; and
- Frakes, Boradkar and Guston, NSF NUE, "Innovative Exploration of Societal, Ethical, Economic and Environmental Impacts of Nanotechnnology-Enabled Materials in Energy Harvesting," $200K.

While **Section 13 Shared and other Experimental Facilities** details the visits and other contributions by more than international scholars and practitioners to the Center from roughly two dozen countries, CNS-ASU scholars have also engaged in substantial international collaborations based on their Center-related work. For example:

- Selin is a senior researcher on a EU 7th Framework funded project led by Strand (Bergen) on "Integrated Assessment of Societal Impacts of Emerging Science and Technology from within Epistemic Networks," to investigate how different methods of analyzing and assessing new and emerging fields of technology can be better integrated, $2.1M, Apr 12-Mar 15.
- Guston is a named international associate on a five-year project funded by the Leverhulme Trust led by Nerlich (Nottingham) on "Making Science Public," to investigate how changes in public engagement with science affect the theory and practice of democracy, $2.84M, May 12-Apr 17.
- Shapira and Youtie are principals with the Innovation Co-Lab – a collaboration of researchers at Georgia Institute of Technology, the University of Manchester (UK), and the Beijing Institute of Technology (China) to advance methodologies and analyses to anticipate the trajectories of emerging technologies. The Co-Lab's focal technologies include graphene, other nanotechnologies and advanced green goods. Co-Lab projects are sponsored by the British Council, the UK Economic and Social Science Research Council, and Chinese Ministry of Science and Technology. Georgia Tech CNS-ASU researchers Porter and Rogers and students Arora, Carley, and Li are among those also engaged in the Innovation Co-Lab.

- Shapira was appointed in 2011 to the advisory board of the Foresight Centre, National Research University - Higher School of Economics (HSE), Moscow, Russia, which focuses on the analysis of emerging technologies including nanotechnology. The Georgia Tech RTTA1 group is a partner with HSE and the Beijing Institute of Technology in a successful University of Manchester proposal to examine nanotechnology emergence in the rising powers of China and Russia.
- Scheufele is member of the External Advisory Committee for the *Wellcome Trust Monitor*, a national tracking survey conducted by the Wellcome Trust in London, UK. He advises on questionnaire construction, data analysis etc.
- Wetmore was a “Bright Ideas” Visiting Research Fellow in Summer 2011 at the ESRC Genomics Policy & Research Forum, University of Edinburgh, Scotland to continue his collaborations on developing new ways to help scientists and engineers better understand the social implications of their work.
- Fisher serves on the Scientific Advisory Boards for the “Applied Metagenomics of the Watershed Microbiome” project (Tang, PI), funded by Genome Canada, and for the “Exploring Possibilities for Patient Involvement in Translational Medicine” project (Boenink, PI), funded by the Netherlands Genomics Institute and Centre for Translational Molecular Medicine.

The following section briefly summarizes the most significant advances of the Center over the last year in terms of fundamental knowledge and technology (here conceived as applied and/or reflexive knowledge, processes, and capacities, often but not exclusively for internal use).

Fundamental knowledge. Each research program, and most individual research projects, contributed significant advances in fundamental knowledge of the societal aspects of nanotechnology in the last year. This section provides some highlights.

- RTTA 1 Research Program Analysis: Analyzing extensive global databases of Science Citation Index records, other publication databases, and patent databases (MicroPatents, PatStat), CNS-ASU researchers have found:
  - RTTA 1/1: Nanotechnology articles have increasingly used more differentiated and application oriented terms based on a social network analysis of nano-prefixed terminology (Arora et al. 2014);
  - RTTA 1/1: The US leads all other countries in numbers of nanotechnology publications appearing in 2011-2013 in three top science journals and in total citations to all nanotechnology journal articles over the same period. However, China leads all other countries in total number of nanotechnology articles and in number of citations to articles published in 2013 (Li, et al. 2014).
  - RTTA 1/2: Acquired firms in the nanotechnology domain provide complementary capabilities to their acquirers (Youtie and Kay 2014).
- RTTA 2 Public Opinion and Values: From large scale public opinion surveys and surveys of high-ranking nano-scientists and engineers, CNS-ASU researchers have found:
  - RTTA 2/1: Knowledge gaps about nanotechnology since 2004 between the least educated and most educated members of the US public have widened. Americans with at least a college degree have shown an increase in understanding of the technology, while knowledge about nanotechnology has declined over time for those with education levels of less than a high school diploma. The Internet is one of the most effective methods in closing gaps and informing the less educated about nanotechnology (Cacciatore, Scheufele & Corley, forthcoming).

- RTTA 2/2: Nano-scientists and engineers use different heuristics when thinking about regulating commercial nanotechnology than when thinking about regulating academic nanotechnology.
- RTTA 2/3: Collecting and mining data from traditional and new media in collaboration with the University of Wisconsin Nanoscale Science and Engineering Center show a more pessimistic than optimistic outlook toward nano in social media.

- RTTA 3/1 Scenario Development: From investigating alternative futuring methods, RTTA 3 researches have found:
  - There is an appropriate role for plausibility, as opposed to probability or risk, in scenario development work (Ramirez and Selin 2014).
- RTTA 4/4: Reflexivity and Integration: Through a set of integrative research and educational activities with NSE researchers, CNS-ASU researchers have:
  - developed the following a general and succinct definition of socio-technical integration that applies not only to the laboratory but to all levels and forms of reflexive expertise: "any process by which technical experts account for the societal dimensions of their work *as an integral part of this work.*"
- TRC 1: Through field work in South Africa, combined with bibliometric and patent analysis and other documentary research, research on Equity, Equality and Responsibility has found:
  - The pro-poor promise of a number of nanotechnologies is not playing out well in actual nanotechnology research agendas (various publications).
- TRC 2: Through work with stakeholders in the Phoenix innovation system, TRC 2 researchers have found:
  - Research on current and alternative future governance arrangements will help determine the extent to which nanotechnology development, as presently overseen, ameliorates or perpetuates societal challenges.

<u>Technology (in this case, mostly applied and/or reflexive knowledge, processes, methods and capacities; often these are developed in one part of CNS-ASU and used in another, thus forming the intellectual core of "ensemble-ization")</u>.

- RTTA 1 Research and Innovation System Analysis:
  - A new patent mapping system that considers how patents cite one another was developed as a base map tool for distribution to researchers, companies and policymakers to enable them to understand the relationships between technologies and view particular portfolios of patents to see how they may come together to spur disruptive new areas of innovation (Kay et al, in press).
  - Several targeted bibliometric studies supported ongoing CNS-ASU work.
- RTTA 2 Public Opinion and Values:
  - The RTTA 2/1 researchers are coordinating data collections with related efforts at Wisconsin, Singapore, Rutgers, Universität Hamburg, and elsewhere to build comparable data sets that will inform policy making and outreach efforts. Because RTTA 2/1 has played a prominent role in sharing these innovations with other scholars, the leaders of the POV team serve as consultants or co-PIs on other related NSF and USDA grants. This methodological outreach is being formalized by RTTA 2/1 researchers through the formal archiving and sharing of data collection instruments.
- RTTA 3 Anticipation and Deliberation:
  - InnovationSpace discloses three inventions per year to Arizona Technology Enterprise (AZTE) under CNS-ASU sponsorship.

  - The development of the Futurescape City Tours marks an innovation in public engagement methods that give priority to enabling citizen-set agendas, use multi-media tools to support 'material deliberation' (Davies et al 2013), and propose capacity-building as a worthwhile outcome.
- RTTA 4 Reflexivity and Integration:
  - RTTA 4/1: A large part of the Center's activity relates to concept work that circulates broadly among the various communities, and "anticipatory governance" is the concept with the highest influence rating.
  - RTTA 4/2: Laboratory engagement studies that made frequent collaborative use of the STIR decision protocol (N=12) were found to be more likely to enhance the value deliberations and material adjustments of participating scientists and engineers than those that make infrequent (N=10) or no (N=7) collaborative use of the protocol.
- TRC 1 Equity, Equality and Responsibility
  - To help engineers and scientists begin to recognize the need to listen and develop the skills necessary to engage in community development, TRC 1 has developed several
  - interactive modules (including "contextual listening," "socio-technical system mapping," and "the Ghanaian Village Case study") that can be plugged into other programs or used as stand alone exercises.
- TRC 2 Urban Design, Materials and the Built Environment
  - Continued work to develop the Nanotechnology in City Environments (NICE) database has drawn 10,000 unique visitors in the past year alone (representing a 10-fold increase). Visits track from 1,000 different cities globally, helping to diffuse information on nanotechnology applications in urban environments.

Education and Training:

- At the post-doctoral and junior researcher level, CNS-ASU continues to train high-quality junior researchers and place them into important positions. Most recently, de Ridder-Vignone, a post-doc with RTTA 3, will begin a tenure track position at James Madison University. Reinsborough will begin a second post-doc at King's College, London.
- At the graduate level, CNS-ASU has involved roughly two dozen graduate students (funded, unfunded, and visiting) in its YR 9 research activities, not including another approximately 20 STIR students. The Center held its second Winter School and completed its design studio. We are collaborating to teach students at ASU's Professional Science Master's Program in Nanoscience, Professional Science Master's Program in Solar Energy, and in the Biological Design PhD program, and we continued other courses at the graduate level. The Center continues to play an integral role in the Human and Social Dimensions of Science and Technology doctoral program and the Professional Science Master's degree program in Science and Technology Policy, both coordinated by Center senior personnel Miller at ASU. CNS-ASU graduate students completing their doctoral dissertations have been placed at University of Georgia (Cacciatore, Wisconsin), University of Utah (Yeo, Wisconsin), and James Madison University (Conley, ASU). The first graduate student to complete the Certificate in Responsible Research and Innovation has been accepted to Harvard Law School.
- At the undergraduate level, CNS-ASU continues to teach classes influenced by the Center, including "Introduction to Science and Technology Policy" for 125 undergraduates at ASU. InnovationSpace continued to make contributions in the cross-training of business, design, and engineering students and the production of provocative and concrete ideas of future nanotechnology products.

- In informal science education, CNS-ASU deepened its strategic and highly generative partnership with NISE Net, not only participating in NanoDays in Mar 14 but more importantly publishing with NISE Net a training guide for museum personnel to help them manage discussions about societal issues.
- In training for scientists and engineers, CNS-ASU continues its improved relationship with NNIN through the local node at ASU, providing both required social and ethical implications training and an informal science communication program to NNIN users and extending the model of training included in the NG-NNIN proposal to other partnerships.

Industrial collaborations. The most significant private-sector collaborations that CNS-ASU participated in over the past year are:

- Collaborations between researchers in RTTA 1/1 and an Atlanta-based producer of data-mining software tools have resulted in improved ways to work with unstructured text new approaches to development of patent mapping tools (Kay et al., in press);
- Based on industrial engagement and personal interviews with actors in the building construction industry, Arora et al. (2014) in RTTA 1 and TRC 2 find that although actors in the building construction domain have awareness of manufactured nanotechnology products, adoption of these products is limited along multiple dimensions; intermediaries could help to reduce risks involved in adoption of these products;
- In RTTA 4/2, the use of the STIR protocol with five project leaders to integrate social and ethical aspects measurably improved industrial R&D project performance, in contrast to five 'controls' who did not use the protocol (Flipse et al., 2013);
- the disclosure of InnovationSpace inventions to AZTE and other private sector contact through ISpace;
- Involvement of numerous private sector organizations in the implementation of the Futurescape City Tours, including from the energy sector (e.g. NRG, Western Massachusetts Electric Company), transportation sector (Pioneer Valley Transit Authority), business development (South of Market EcoDistrict), architecture (Shannon and Wilson, Inc., Mayor-Reed architects), nanotechnology (The Alberta Centre for Advanced Micro Nano Technology Products, Quantiam and Technologies Inc.), and water (The E.L. Smith Water Treatment Plant);
- TRC 1 at Georgia Tech partnered with the Sickle Cell Foundation of Georgia to give engineering students real world experience of how to develop community collaborations. The Sickle Cell Foundation gave us an inside look at the problems faced by those who suffer from Sickle Cell Anemia and Sickle Cell Trait, and we in turn developed potential solutions and strategies for tackling these difficult issues;

- Previous collaborators from the Arizona Technology Council, Arizona Biotechnology Council, Arizona Nanotechnology Cluster, Greater Phoenix Economic Council, Arizona Technology Investors Forum, Phoenix Union School District, and Arizona Science Museum contributed to the scenario study through participatory workshops, interviews, and feedback; and
- Publication of a special issue of the *Journal of Nanotechnology Law and Business*.

The following section briefly describes the current and potential impacts of CNS-ASU on teaching, training, and learning; outreach to pre-college institutions; broadening the participation of underrepresented groups; enhancement of infrastructure of research and education; dissemination to scientific and technological communities; and benefits to society.

Teaching, training and learning. At any given time, CNS-ASU, across its three constituent universities, is training in various capacities approximately one-half dozen junior research faculty and post-doctoral fellows, two dozen graduate students, and one dozen undergraduate students in the societal aspects of nanotechnology. At the constituent universities, most of this training consists of working on CNS-related research projects under the subcontracts to those universities. In each location, but at Wisconsin in particular, the community of trainees is larger than that of funded student researchers because the data developed by the Center are too extensive to be analyzed entirely within the budget. At Wisconsin and ASU, CNS-related research is being incorporated into numerous classroom modules and activities. At ASU, CNS has engaged in extensive training and curriculum development and innovation. In this reporting year, CNS-ASU has continued to influence undergraduate courses in disciplinary areas, expanded its graduate training with new coursework and research opportunities for both social scientists and NSE students, and collaborated with NISE Net to expand the inclusion nano-in-society ideas in informal science education. The graduate studio co-led by Wiek and Petrucci created a video depicting the future urban form of Phoenix enabled by nanotechnology. The videos were shared with diverse audiences: science-policy experts in Washington, DC, academic scholars in Boston, MA, high school students in Phoenix, AZ, and members of the United States Green Building Council-Arizona Chapter in Tempe, AZ

Outreach to pre-college institutions. CNS-ASU has arranged for continuing education credit for in-service teachers for attending its Science Cafes. In previous years we have reported on the development and teaching of what we believe to be the nation's only graduate-level course for in-service high school teachers in nanotechnology and society, and on our inability to find an appropriate financial model for attracting enrollment to the course. We previously modified the course for inclusion in the PSM in Nanoscience degree program, and we have taught it again the current year. The *Encyclopedia of Nanoscience and Society*, published in YR 6, has high school and college libraries as its target market. We are also orienting our interactions with NISE Net to help develop materials for the in-service teachers with whom science museums work. In conjunction with ECAST, CNS-ASU has developed a model for deliberative engagement with high school students over issues in science and emerging technologies. Three (on geoengineering, synthetic biology, and biodiversity) were conducted in prior years. At ASU, we continue our deepening relationship with Phoenix Bioscience High School. In the reporting year, we involved the school in the Futurescape City Tours and screened and discussed the video developed by the design studio about a nano-enabled Phoenix in 2050.

Broadening participation of under-represented groups. CNS-ASU, including its constituent universities, has developed a strong record of including women in key research and leadership positions and recruiting members of under-represented groups into graduate and undergraduate research positions. In most measurement categories, CNS-ASU equals or exceeds national averages. In previous years, we have focused attention on disability communities as an under-represented population through the activities of TRC 1 Equity, Equality, an Responsibility, (former) TRC 2 Human Identity, Enhancement, and Biology, and Miller's interactions with the IGERT on Person-Centered Technologies. In a previous year, we replaced the symposium for under-represented students with a training activity more akin to the DC Summer Session and other training activities that CNS-ASU has made successful, but targeted for under-represented students in partnership with the Hispanic Research Center (HRC). Held for the first time in Sp 09 for two dozen graduate students from under-represented communities, the seven-week course was quite successful. We repeated it in Fall 11 but did not do so as planned in Fall 13 because of lack of funding at HRC.

Enhancement of infrastructure for research and education. CNS-ASU maintains a web site (http://cns.asu.edu) that provides information about its research, education and outreach programs to a general audience. It was redesigned last year and we continue to tweak it. CNS-ASU has most of its monthly seminars and occasional speakers' presentations available on the web site in audio, video, and PPT versions – including new video formats on YouTube, and the re-designed site will emphasize access to video and other resources. The website connections to several associated projects in-depth, including:

- The Plausibility Project site (http://www.cspo.org/projects/plausibility/), which has detailed information, references, and papers about the project;
- The STIR project website (http://cns.asu.edu/stir/) and Facebook site, which provides general information about the project and a password protected site for collaborative work among the far-flung international STIR network; and
- The Virtual Institute for Responsible Innovation (http://cns.asu.edu/viri), which has a temporary rudimentary site publishing news and linking to a listserv established to link scholars and others with an interest in responsible innovation.

CNS-ASU has been crucial in the creation and maintenance of the Society for the Study of Nanoscience and Emerging Technologies (S.NET; Guston is a founding member of the board, a member of the first and second program committees, and a co-chair of its third program committee). It co-hosted, with CNS-UCSB, the third annual meeting of S.NET in Nov 11, with more than 200 attendees from more than 20 countries. CNS-ASU co-sponsored, with NNIN, NISE Net and other ASU projects, the first Congress on Teaching the Social and Ethical Implications of Research, with more than 100 participants. CNS-ASU has also created a number of research tools and instruments, e.g., the searchable definition of nanotechnology and the databases derived with it, survey protocols and opinion data, and the NCTF reports, internet transcripts and video data that have been sought by and provided to other scholars. CNS-ASU has also received more than 100 international visiting students, scholars and practitioners seeking a vibrant intellectual community and training in the Center's methods.

Dissemination to scientific and technological communities. CNS-ASU has engaged in extensive dissemination activities, both to its social science and humanities colleagues, but also to the community of NSE researchers with whom it interacts. Roughly 20% of its published, forthcoming or under review journal articles appear in journals like *Nature Nanotechnology*, *Journal of NanoParticle Research*, *Journal of Nanoscience and Nanotechnology*, *EMBO Reports*, and others that are oriented toward science and engineering researchers. We have also published in trade and professional journals that target scientists, e.g., *Materials Today* and *Nano Today*, and have published one commentary in *Science* and two in *Nature*, as well as letters in both journals. CNS-ASU researchers have given nearly 800 presentations, roughly 60% of which were delivered to their social science colleagues and roughly one-third of the remainder to targeted audiences of scientists and engineers. Our dissemination activities have also included supported and unsupported invitations to our All Hands meeting, extended to roughly 10 individuals, including students, each year, and the workshops we conducted in YR 9. Dissemination to colleagues also includes the Winter School.

Benefits to society. In its Jul 07 memorandum, NSF describes a set of questions (sub-criteria) related to its broader impacts criterion. Here we articulate the contributions of CNS-ASU for each of these sub-criteria:

- *"How well does the activity advance discovery and understanding while promoting teaching, training, and learning?"* The integration of research, education, and outreach is a particular focus and strength of CNS-ASU, and many of its programs are designed toward this goal from the outset.

- CNS-ASU has teaching, training, and learning projects at all levels from the pre-college education to post-doctoral training, as well as informal science education projects and training for scientists and engineers.
- Most of these teaching, training, and learning projects integrate research, education, and outreach, e.g.:
  - Students and trainees participate in the NISE Net-sponsored NanoDays by staffing a booth of nano-demonstrations at a local arts festival;
  - Undergraduate research, e.g., as represented in the third *Yearbook*, is well-integrated with research programs;
  - Graduate course development, e.g., the design studio conducted in Sp 13 is driven by research interests and outreach opportunities;
  - Research frames are brought to bear on high school engagement programs in geoengineering, synthetic biology, and biodiversity;
  - CNS-ASU research activities become case studies for concurrent educational activities, e.g., integrating nanotechnology cases into the units of "Introduction to Science and Technology Policy;" and
  - CNS perspectives are incorporated into interdisciplinary graduate training through the participation of Miller and Guston in IGERT programs.
- CNS-ASU partnerships with NSE researchers have enriched its Science Cafes, which local teachers may use for credit;
- CNS-ASU trains a small number of CNS-Biodesign Fellows, CNS-FSE Fellows, and other PhD+ students to conduct societal implications research or perform outreach projects around their NSE research, and this program is expanding to GA Tech;
- Student authors are included on a large plurality of CNS-ASU manuscripts;
- Students are first or sole-author on roughly one in six CNS-ASU presentations, and they have presented their CNS-related work in a variety of venues;
- CNS-ASU has created and will continue to develop a section of its website to serve as a clearinghouse for nano-in-society curricular activities.

- *"How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)?"* CNS-ASU has established a strong record for the participation of women and underrepresented groups. For the Center, however, diversity is not just a matter of inclusion of a diverse research population but making aspects of diversity explicit parts of the research agenda.
  - CNS-ASU fosters research topics that explicitly address issues of underrepresented groups, e.g.:
    - RTTA 1/1 Innovations Systems Assessment has investigated female involvement in nanotechnology patenting;
    - A dissertation across RTTA 3 and TRC 1 addresses how under-represented perspectives were or were not included among the groups participating in the National Citizens' Technology Forum; and
    - An entire research program area on Equity, Equality and Responsibility (TRC 1), which in part addresses ethnic and geographic issues in the distribution of benefits and risks from nanotechnologies; and
  - CNS-ASU collaborates with the Hispanic Research Center on science policy training for its two dozen graduate-level fellows from underrepresented groups;
  - Through Miller, CNS-ASU is collaborating on an IGERT award to ASU's Panchanathan on "Person-centered Technologies and Practices for Persons with Disabilities."

- *"To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?"* CNS-ASU envisions itself as a national and international leader in promoting research, education, and outreach in nano-in-society topics and in integrating those topics into NSE research and education settings.
  - CNS-ASU exists as the largest node of the NSF-instigated nano-in-society network and has taken leadership in the generation of the following networks and collaborations (outside ASU):
    - CNS-ASU has hosted more than 100 international visitors, from 24 different countries;
    - CNS-ASU has become a "core partner" in NISE Net, recognizing the extent and depth of collaborations centered on enhancing informal science education with expertise from the societal aspects of NSE;
    - The Center conducted its second Winter School on the Anticipatory Governance of Emerging Technologies, which involved more than one dozen junior scholars;
    - The associated STIR project leads an expanding international network of graduate students and laboratories; and
    - The associated VIRI has begun to link roughly one dozen centers of excellence in responsible innovation into a productive network.
  - Within ASU, CNS-ASU is a hub for transdisciplinary research and teaching, with specific activities including:
    - CNS curricular offerings currently enhance graduate education in the Biodesign Institute, the Ira A. Fulton Schools of Engineering, the Department of Physics and the Department of Chemistry and Biochemistry;
    - CNS supports InnovationSpace, which bridges the schools of design, engineering, and business;
    - CNS has helped create a new, cross-disciplinary undergraduate certificate in Science, Technology and Society;
    - CNS graduate coursework helps link the Schools of Politics and Global Studies, Human Evolution and Social Change, Life Sciences, and the Human and Social Dimensions of Science and Technology doctoral program;
    - CNS has led the creation of a new graduate certificate in responsible research and innovation; and
    - CNS collaborative research and teaching activities are included on virtually every large NSF proposal (IGERT, ERC, SRN, STC) submitted by ASU.
  - CNS-ASU partners with the Arizona Science Center for the production of monthly Science Cafes during the academic year;
- *"Will results be disseminated broadly to enhance scientific and technological understanding?"* CNS-ASU aims to reach a variety of audiences – scholarly, professional, and public – with its research, education, and outreach activities.
  - CNS-ASU's e-mail distribution list reaches roughly 1400 individuals;
  - CNS-ASU researchers have given nearly 800 talks across all audiences since the inception of the Center, with roughly 100 in YR 9 alone;
  - CNS-ASU targets networks and user facilities for the distribution of nano-in-society training material, e.g.: NISE Net has disseminated CNS-ASU products to approximately 300 museums and other participants in NanoDays;
  - CNS-ASU conducts monthly (academic year) Science Cafes – many directly involving CNS personnel – during the academic year, at the Arizona Science Center;

  - CNS-ASU has a contract with Springer to produce the first five volumes of the *Yearkbook of Nanotechnology in Society* (Guston, series editor), the first three of which are published, and the fourth of which is significantly in preparation;
  - CNS-ASU Director Guston has published the two-volume *Encyclopedia of Nanoscience and Society* (Sage, 2010) that transmits detailed concepts in nano-in-society to high school and college students;
- *"What may be the concrete and demonstrable benefits of the proposed activity to society?"* The concept of anticipatory governance – comprising foresight, engagement, and integration – provides the intellectual framework for the broader benefits to society that CNS-ASU seeks to generate.
  - Foresight activities create an opportunity for diverse publics to encounter, explore, and evaluate nanotechnologies prior to their actual emergence;
  - Engagement activities, including the small-scale intensive Science Cafes as well as informal science education activities informed by CNS perspectives and the larger-scale piloted Futurescape City Tours, create more informed citizens on important topics in nano-in-society;
  - Interaction with NSE researchers, including courses, training activities, workshops, laboratory collaborations, and interventions results in identifiable changes in knowledge, identity, and practice in the laboratory;
  - CNS-ASU has had important informational and educational exchanges with decision makers, including:
    - Shapira's presentation to the OECD/NNI International Symposium on assessing the Economic Impact of Nanotechnology;
    - Guston's presentation on a panel at the Brookings Institution in Washington, DC on "Rethinking Responsibility in Innovation."
    - The Center's collaboration with the CSPO office in Washington, DC on the "New Tools for Science Policy" series, which has hosted CNS scholars Bennett and Petrucci and Foley in conversations with 30-40 science policy makers in the reporting year.
    - Scheufele co-organized, with Ralph Cicerone (NAS), Barbara Schaal (Washington University), Alan Leshner (AAAS), and Baruch Fischhoff, the Sackler Colloquium at the National Academy of Sciences on "The Science of Science Communication II."
    - Porter, Shapira and others from RTTA 1 performed an assessment of the NNI that was used and cited throughout the President's Council of Advisors on Science and Technology (PCAST)'s congressionally mandated biennial review, *Report to the President and Congress on the Fourth Assessment of the National Nanotechnology Initiative*.

The Center for **Nanotechnology in Society**
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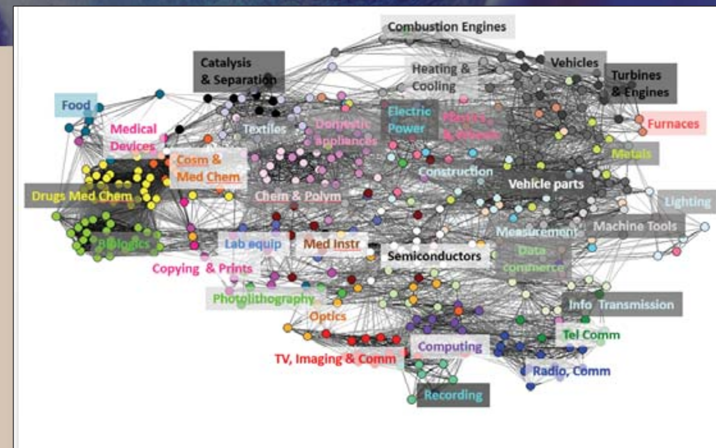
New Patent Mapping System Improves Innovation Insight

One of the goals of RTTA 1 is to characterize nanoscience innovation dynamics. While patent databases provide a catalog of innovation, their hierarchical structure fails to show relationships between patents, often more informative for understanding technology development.

A new patent mapping system, developed by Jan Youtie and her colleagues at Georgia Tech, CNS-UCSB, Universitat Politècnica de València and University of Sussex, and an Atlanta-based producer of data-mining software (IISC) discards the hierarchical classifications and considers how patents cite one another instead. The maps, by showing how technologies are related, can reveal nuances in innovation trajectories. For example, while most current nanotechnology patents are in materials and physics, bio-nano patents are increasing at a faster rate.

Adding to the understanding of these dynamics, Youtie and colleagues also published an analysis of nano lexicon trends and their potential implications for the nanoscience field (Arora, S. et al. **Measuring the Development of a Common Scientific Lexicon in Nanotechnology.** *Journal of Nanoparticle Research.* 16(1): 11 pp. doi: 10.1007/s11051-013-2194-0.

By illustrating relationships between technologies, including their degree of similarity and interdisciplinary intersections, the new patent mapping system reveals innovation hotbeds, trends of technology emergence, discipline evolution, and forces acting on innovation.



Offering unique insight for anticipatory governance, research funding, and academic program development, the mapping system has appeared in *Wired-UK*, the *MIT Technology Review,* and *Futurity*, among other publications. An article on the patent mapping research is forthcoming in the *Journal of the American Society for Information Science and Technology (JASIST)*.

Together with **Dr. Philip Shapira**, also of Georgia Tech, and Dr. Jose Lobo of ASU, **Dr. Jan Youtie** co-leads the Real-Time Technology Assessment (RTTA 1) at CNS-ASU that focuses on the scope of the Nanoscale Science and Engineering (NSE) enterprise and its effects on public values and outcomes.

Jan Youtie | Georgia Institute of Technology
Director, Enterprise Innovation Institute
Adjunct Professor, School of Public Policy
Director, Program in Science, Technology, and Innovation Policy

Research, education and outreach activities at CNS-ASU are supported by the National Science Foundation under cooperative agreement #0937591

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Toward *Un*common Ground: Fostering Civil Disagreement in the Modern Communication World

When it comes to emerging areas of science, including nanotechnology, public engagement, and civil disagreement help improve awareness and understanding of new technologies. The Internet, and in particular sites enabling direct and open exchange among users, held the promise of more robust public discussions.

However, says Scheufele, the Internet mostly encourages users to surround themselves with likeminded information and people, and though comment sections do offer a place to disagree, anonymity fosters debate that's anything but civil. Furthermore, Scheufele's research showed that the tone of comments responding to a nanotechnology article not only influenced readers' trust of the source, but also their understanding of the science.

In response to these findings, *Popular Science* closed their comments. But Scheufele argues that rather than shut down all debate, we need to find ways to encourage heterogeneous *and* civil exchanges as communication technology develops.

In a TEDx Talk, **Dr. Dietram A. Scheufele** questions the promise of the Internet to offer a space for healthy civil disagreement. He offers 3 suggestions to begin moving toward this ideal:

1. Reduce anonymity.
2. Increase opportunities for "informational serendipity."
3. Encourage more people to join, rather than simply observe, debate.

The talk may be viewed at http://www.youtube.com/watch?v=-2MvS4gm_mo.

Scheufele's work focuses on the role that social media and other emerging modes of communication play in our society. In September, he co-organized a National Academy of Sciences Sackler colloquium on the "science of science communication" and spoke specifically about the politicization of science in the modern world of communication.

Along with **Dr. Elizabeth Corley** at ASU, Dr. Scheufele leads the Real-Time Technology Assessment (RTTA 2) research thrust at CNS-ASU that explores the understanding of nanotechnology among the general public and the role of the media in reflecting and influencing that understanding.

Dietram A. Scheufele | University of Wisconsin-Madison
John E. Ross Professor of Science Communication
Co-Principal Investigator, CNS-ASU
2013 Fellow, American Association for the Advancement of Science (AAAS)

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Futurescape City Tour Project Expands to Five More Cities

How can citizens become more involved in the development of emerging technologies and help to shape the future contours of their cities? The Futurescape City Tours (FCT) are a novel public engagement method, designed by CNS-ASU faculty and comprised of an urban walking tour; interactions between citizens, stakeholders, and experts; and image-based deliberative sessions.

In 2013, the FCT expanded the 2012 Phoenix pilot to include St. Paul, Portland, Springfield (MA), Edmonton and Washington, DC. At each site, a group of citizens were recruited to participate in an orientation session, a day-long walking tour, and a final deliberative session designed to explore socio-technical change.

At each site, citizens questioned and imagined how nanotechnology might transform urban infrastructure, public space, transportation systems, architecture, and other features of the city.

Researchers selected tour sites based on citizens' concerns and curiosities about their city. During the tour, citizens met with city officials, scientists, and business leaders to explore urban nanotechnologies.

As they visited power plants, canals, laboratories and other urban atmospheres, the citizens took photographs to capture their impressions about the past, present, and future.

Participants later shared their photos and impressions of the city and discussed their observations, critiques, and hopes for the future of their city.

Dr. Cynthia Selin explores future-orientation from an interdisciplinary perspective, asking questions about how foresight is applied in the governance of emerging technologies.

Along with **Dr. Kelly Campbell Rawlings** from the Sol Price School of Public Policy at USC, Dr. Selin leads CNS-ASU's Real-Time Technology Assessment (RTTA 3) exploring plausible futures and elucidating public preferences about the future.

Cynthia Selin | Arizona State University
Assistant Professor, School of Sustainability
Senior Sustainability Scientist, Global Institute of Sustainability

Research, education and outreach activities at CNS-ASU are supported by the National Science Foundation under cooperative agreement #0937591

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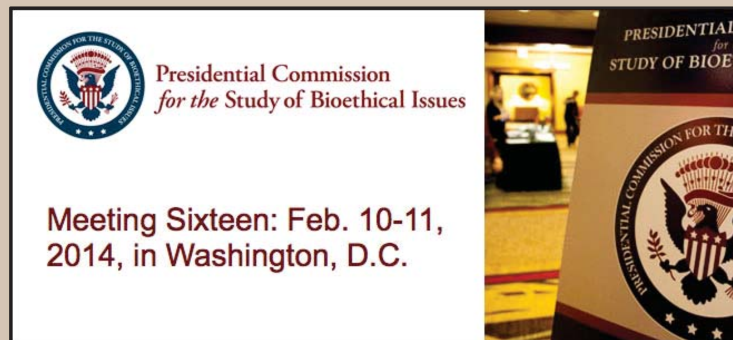
Advancing the Field of Socio-Technical Integration

The Socio-Technical Integration Research (STIR) project has shown that, under certain conditions, embedding humanists into nanotechnology and other laboratories yields concrete results. When the STIR protocol is used frequently and in a collaborative manner, laboratory researchers alter their R&D practices in light of newly considered socio-ethical aspects.

To take stock of the emerging field of socio-technical integration, Fisher organized the inaugural Communities of Integration (CoI) workshop at ASU in May 2013. This brought together seven distinctive socio-technical integration projects. Participants assessed the state of their research and compared the goals, methods, and assumptions of each approach.

The second CoI workshop is being held at the University of Waterloo this June.

Drawing on his work with the STIR project, **Dr. Erik Fisher** presented to the President's Bioethics Commission on how including ethicists on a research team might affect change in scientific research decisions and under what conditions socio-technical integration generates productive interdisciplinary collaboration.



Video of the meeting and Fisher's testimony may be viewed at http://www.tvworldwide.com/events/bioethics/140210/

Dr. Fisher leads STIR as well as the CNS-ASU Real-Time Technology Assessment (RTTA 4) thrust, which aims to understand the dynamics of nanoscale science and engineering (NSE) laboratories through ethnographic and other methods. He is also an associate editor for the *Journal of Responsible Innovation*.

Erik Fisher | Arizona State University
Assistant Professor, School of Politics and Global Studies
Assistant Professor, Consortium for Science, Policy and Outcomes

Research, education and outreach activities at CNS-ASU are supported by the National Science Foundation under cooperative agreement #0937591

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Assessing Equity and Equality of Emerging Technologies

An NSF Graduate Research Fellow at Georgia Tech and collaborator with CNS-ASU, **Thomas Woodson's** research explores inequality in nanomedicine research and the role of public-private partnerships (PPP) in addressing health inequality.

He has found that some PPPs oppose the use of nanomedicine for treating diseases of poverty (DOP) because the cost of the technology prohibits the medicine from reaching the market in developing countries fast enough. They argue instead for directing R & D dollars to more mainstream technologies to treat DOP.

Through his collaboration with CNS-ASU, Woodson has presented his work on nanotechnology equity and equality at the Society for the Social Studies of Science Meeting in Denmark and the Universidade Federal do Parana in Brazil, among other conferences and workshops.

Nanomedicine holds great promise for treating cancer, Parkinson's, and asthma, among other diseases. But does it hold the same promise for diseases that predominantly affect the poor, such as malaria and tuberculosis?

Estimated tuberculosis incidence rates, 2010.
Data from the World Health Organization. Map from CDC.gov.

"CNS, and TRC 1 in particular, has been invaluable for my training and development as a scholar," says Woodson. "I learned a variety of research techniques and worked alongside senior scholars. One of the things that excites me about CNS is that our work clearly impacts development and poverty around the world."

Woodson has accepted an assistant professor position in the Department of Technology and Society at Stony Brook University, where he will study the intersection of technology and society at regional and global levels.

Thomas Woodson is an NSF Graduate Research Fellow at Georgia Tech. He has collaborated with Thematic Research Cluster (TRC 1) faculty at CNS-ASU. TRC 1 is co-led by **Dr. Jameson Wetmore** at ASU and **Dr. Susan Cozzens** at Georgia Tech and focuses on equity and equality of nanotechnologies.

Research, education and outreach activities at CNS-ASU are supported by the National Science Foundation under cooperative agreement #0937591

The Center for Nanotechnology in Society
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Scenarios Explore Urban Nanotechnology Futures

Will resource-efficient corporate campuses provide gentrified and convenient places to work, live and play in Phoenix? Will alleys become zones for creative and communal encounters blending private and public space? Both futures are plausible given Phoenix's historical and emerging socio-technical trajectories.

Visualized scenarios offer a way to imagine how a city's future might play out – here supported by information collected in the Nanotechnology in City Environments (NICE) database (http://nice.asu.edu/) and by design proposals that cohesively captures the technical, cultural, and aesthetic influences acting on a city.

The product of a unique collaboration between CNS-ASU and ASU's Design School, contrasting scenarios offer imaginaries of the interplay between emerging technologies and the environmental, economic. and social fabric of the city. Scenarios also provide a way to consider how current R&D, policy decisions, and public deliberations influence future urban landscapes and social dynamics.

At a recent seminar in Washington, DC, Darren Petrucci, professor in the ASU Design School, and Rider Foley, postdoctoral scholar with CNS-ASU, presented visualized scenarios as a new tool for science policy. A video of the DC-CSPO presentation and the scenario video are available on the CNS-ASU Vimeo channel at: http://vimeo.com/88409526

One scenario depicts the integration of work, live, and play on a corporate campus in a futuristic Phoenix.

Photo by ASU Design School

Dr. Arnim Wiek and his team conduct research in the Thematic Research Cluster (TRC 2) on Urban Design, Materials, and the Built Environment. The group addresses the question: *How can nanotechnology be innovated and governed in responsible ways and with sustainable outcomes?* They employ system analysis, scenario construction, assessment, and intervention research methods to explore theories of anticipatory governance, sustainability, and responsible innovation.

Wiek, A., Guston, D.H., van der Leeuw, S., Selin, C., & Shapira, P. (2013). **Nanotechnology in the city: Sustainability challenges and anticipatory governance.** *Journal of Urban Technology*, 20(2), 45-62.

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Winter School Expands Reach of CNS-ASU Research Methods and Theory

For the past two years, CNS-ASU has held the week-long CNS-ASU Winter School at Saguaro Lake Guest Ranch. Open to graduate students and recent PhDs, the school is designed to give participants an introduction to and practical experience with methods and theory employed by CNS-ASU faculty and associates. The curricular content and activities are designed around the CNS real-time technology assessments and the two thematic research clusters.

"What we learned here won't be something we just put on a shelf. Everything is useful for contributing to our careers, institutions or professional workplaces."

--Daniel P. Miller
Project Manager with US DOD
PhD Student at Virginia Tech
2014 Winter School participant

"We looked at where social scientists can intervene or integrate into the development process and potentially change the trajectory of overall technological development."

--Molly Hartzog Storment
PhD Student at North Carolina State
IGERT Fellow, Genetic Engineering & Society
2014 Winter School Participant

Presentations describing tools, concepts and methods that guide CNS-ASU research are supplemented by practical activities and rigorous discussion.

Ample work time and breaks encourage participants to guide their individual learning experiences, and the informal school setting is ideal for promoting spontaneous productive and collegial conversations. CNS-ASU Winter School also offers mentoring sessions with faculty.

Dr. Ira Bennett (left) and **Dr. Jameson Wetmore** (right) lead CNS-ASU education and outreach efforts.

Ira Bennett | Arizona State University
Assistant Research Professor, CNS-ASU and CSPO
Jameson Wetmore | Arizona State University
Associate Professor, School for Human Evolution and Social Change

Research, education and outreach activities at CNS-ASU are supported by the National Science Foundation under cooperative agreement #0937591

The Center for Nanotechnology in Society
ARIZONA STATE UNIVERSITY

Starting the Nanotechnology in Society Conversation with Museum Visitors

Talking about the social implications of science is somewhat of a departure—and a sometimes uncomfortable one—from traditional science museum content. To help facilitate this shift in museum education, CNS-ASU's Education and Outreach team, in collaboration with the Nanoscale Informal Science Education Network (NISE Net, NSF #0940143), published *Nanotechnology and Society: A Practical Guide to Engaging Museum Visitors in Conversations*.

Conversations, in addition to the more conventional formats of lecture, demonstration and display, are encouraged for science museum education. From conversation tips to training agendas to improv games, the guide provides numerous practical resources for training museum staff on how to encourage meaningful conversations with visitors about nanotechnology and its future societal implications.

The guide focuses on using the "Three Big Ideas" of technology and society as a conversation framework:

1. *Values* shape technologies
2. Technologies affect *social relationships*
3. Technologies work because they're part of *systems*

The guide aims to empower museum educators and visitors to explore how emerging nanotechnologies may affect their lives and society.

Getty Images

The guide is being used by numerous science museums across the country. The "Three Big Ideas" framework used in the guide is part of a museum staff training program developed by CNS-ASU staff. It can be viewed at Vimeo: http://vimeo.com/channels/nanoandsociety

Dr. Ira Bennett (left) and **Dr. Jameson Wetmore** (right) have been advising and collaborating with science museums and NISE Net on nano and society issues for several years. They lead the CNS-ASU education and outreach efforts.

Ira Bennett | Arizona State University
Assistant Research Professor, CNS-ASU and CSPO
Jameson Wetmore | Arizona State University
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The Center for Nanotechnology in Society
ARIZONA STATE UNIVERSITY

CNS-ASU Leads Community Building for Responsible Innovation

Building a capacity to anticipate the challenges of innovation is one of the primary goals of CNS-ASU. To that end, CNS-ASU faculty led three efforts to coalesce an international community working to establish a common understanding of responsible innovation (RI) research, training, and outreach and to incorporate ethics, responsibility, and sustainability into R & D.

David Guston led an international symposium, "Responsible Innovation in a Global Context," at the AAAS 2014 conference. In addition to Dr. Erik Fisher, who directs the Socio-Technical Integration Research (STIR) project and leads RTTA 4 at CNS-ASU, the symposium included researchers from Brazil, Canada, Denmark, Japan, Norway, and the United Kingdom. They shared their experiences with defining and implementing responsible innovation in a variety of societal and political contexts.

VIRI
Virtual Institute for Responsible Innovation

In an effort to accelerate the formation of an international community of scholars and practitioners working to create a common concept of RI, CNS-ASU established the Virtual Network for Responsible Innovation (VIRI). Part of NSF's initiative, "Science Across Virtual Institutes," VIRI is led by CNS-ASU members David Guston and Erik Fisher and aims to facilitate worldwide collaboration among RI students and scholars and to contribute to the governance of emerging technologies, often dominated by competitive economic, political, and societal forces.

David Guston, together with VIRI colleagues, successfully proposed the *Journal of Responsible Innovation* to the British academic publishing house Taylor & Francis. The journal covers a wide range of RI topics and publishes traditional journal articles and research reports; pedagogical articles; and reviews, discussion papers, and perspectives on current political, technical, and cultural events. CNS-ASU director David Guston is the founding editor-in-chief, and CNS-ASU's Erik Fisher is an associate editor. The inaugural issue, released in February, is available in its entirety at http://explore.tandfonline.com/cfp/est/tjri

Dr. David Guston is the director of CNS-ASU, co-director of the Consortium for Science, Policy and Outcomes (CSPO), and professor of politics and global studies at ASU. **Dr. Erik Fisher** is assistant professor in CSPO and the School of Politics and Global Studies at ASU.

Research, education and outreach activities at CNS-ASU are supported by the National Science Foundation under cooperative agreement #0937591

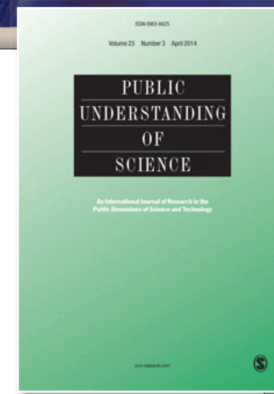
The Center for Nanotechnology in Society
ARIZONA STATE UNIVERSITY

Publications Review CNS-ASU Contributions in Anticipation & Engagement

CNS-ASU's central, strategic vision is "anticipatory governance," or the capacity to manage emerging technologies before they become unmanageable. While many in the science and technology studies (STS) accept considerations of social responsibility and long-term outcomes as an essential part of the innovation process, other STS circles remain critical.

Much of critics' resistance to anticipatory governance, David Guston asserts in the April 2014 issue of *SSS*, can be tied to incomplete understanding of what anticipatory governance actually is. To engage with those critics, Guston examines the genealogy of "anticipatory governance" to provide a more nuanced understanding of its definition, theories, practices, and intentions. He also addresses three central critiques that focus on anticipatory governance's closeness to nanotechnology, the public, and technosciences, proximities that often raise skepticism.

Guston, D. **Understanding 'Anticipatory Governance.'** *Social Studies of Science* 44(2): 218-242. doi: 10.1177/0306312713508669



Moving citizens from understanding to engagement offers the opportunity to improve both democratic participation and scientific literacy, asserts David Guston in the January 2014 issue of *Public Understanding of Science*.

To that end, he reviews the public engagement activity and outcomes of the National Citizens' Technology Forum on nanotechnology and human enhancement. He continues with a discussion of two spin-off activities—the Danish Board's global engagement activity World Wide Views and the more concrete and experiential material deliberation activities of CNS-ASU.

He concludes that while engagement cannot overcome all of the challenges to democracy or for science, they do provide solid opportunities for intervention.

Guston, D. **Building the Capacity for Public Engagement with Science in the United States**. *Public Understanding of Science* 23(1): 53-59. doi: 10.1177/0963662513476403

Dr. David Guston is the director of the Center for Nanotechnology in Society at ASU. Dr. Guston is widely published and cited on research and development policy, technology assessment, public participation in science and technology, and the politics of science policy.

Research, education and outreach activities at CNS-ASU are supported by the National Science Foundation under cooperative agreement #0937591

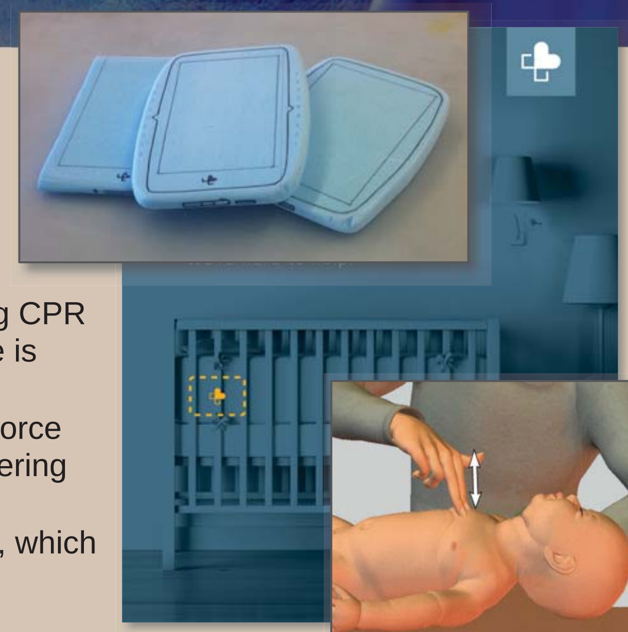
The Center for
Nanotechnology in Society
ARIZONA STATE UNIVERSITY

CNS-ASU Provides Support and Ethical Guidance for InnovationSpace Students

InnovationSpace is a transdisciplinary education and research lab that seeks to teach students how to develop products that not only create market value, but also serve real societal needs while minimizing impacts on the environment. In the two-semester course for senior undergraduate students, interdisciplinary teams develop, test, and refine real-world product concepts for paying sponsors including Intel and Herman Miller.

Since 2006, CNS-ASU has supported the work of three teams annually. CNS-ASU faculty provide teams with professional and ethical guidance during all stages of product development to help them understand how the technology they incorporate functions in society and to encourage them to consider such ethical issues as sustainability, equity, and recyclability.

For more information on **InnovationSpace**, visit http://innovationspace.asu.edu.



The 2013-14 InnovationSpace is focused on products to solve childhood safety issues. One team is developing a force sensor to improve administering CPR to infants and young children.

The sensor rests on a child's chest during CPR and lets the user know whether he or she is applying appropriate force during CPR compressions. Nanosensors enable the force sensor to be small enough to avoid interfering with the CPR process, and piezoelectric materials eliminate the need for a battery, which could also interfere.

Team member **Joleen Jansen**, an ASU senior studying industrial design and design management, was chosen to represent ASU at the Industrial Designers Society of America (IDSA) Western District Conference, where she presented the CPR force sensor project. She was selected from among 11 western district representatives to present at the IDSA International Conference in August. Jansen and her team collaborated with Real-Time Technology Assessment (RTTA 3) faculty at CNS-ASU. RTTA 3 is co-led by **Dr. Cynthia Selin** at ASU and **Dr. Kelly Campbell Rawlings** at USC focuses on exploring plausible futures and elucidating public preferences about the future.

Research, education and outreach activities at CNS-ASU are supported by the National Science Foundation under cooperative agreement #0937591

8. Strategic Research Plan

The long-term research goals of CNS-ASU are to demonstrate and refine the ability to perform RTTA and, in doing so, cultivate reflexivity and build the capacity for anticipatory governance in the NSE enterprise broadly conceived. By "reflexivity" we mean a capacity for social learning – by individuals, groups, institutions, and publics – in the NSE enterprise narrowly and society more broadly that expands the domain of and informs the available choices in decision making about nanotechnologies. By "anticipatory governance" we mean a broad-based capacity that extends through-out society that can collect, analyze, synthesize and interpret a wide range of information to manage emerging knowledge-based technologies while such management is still possible (Barben et al. 2008; Guston 2008; Karinen and Guston 2010; Guston 2010; Sarewitz 2011; Guston 2014).

In the nine years of the Center, we have demonstrated the ability to perform RTTA through the individually successful programs, the synergies among them, and the successful completion of the "end-to-end" activity related to TRC 2, Human Identity, Enhancement and Biology (Hays et al. 2012), which integrates those programs, along with the integrative research within TRC 1, Equity, Equality and Responsibility (Wetmore and Cozzens 2010) and the similar, integrative research in new TRC 2, Nano and the City. The ability to extend and refine RTTA required developing two related strengths: the connection among the Center's programs in an ensemble, and the guiding role provided by the strategic vision of anticipatory governance – and its component capacities of foresight, engagement, and integration – for the research programs. The success of these efforts was greatly enhanced by our commitment to embark on empirical projects aimed at the Center's activities – in a reflexive mode of turning our methods on ourselves – to gather strategic intelligence. As described in the YR 4 and YR 5 annual reports, to facilitate the research ensemble, post-doctoral fellow Matt Harsh studied TRC 2's end-to-end process and conveyed his findings to TRC 1. Also as described in the YR 4 and YR 5 annual reports, to strengthen the guiding role of anticipatory governance as the Center's strategic vision, we held a Visioning Workshop on futures of anticipatory governance (Selin 2008). We have continued this reflexive study in the recent year with the impacts-outcomes study, reported in RTTA 4, conducted by Michael Reinsborough.

With the "end-to-end" perspectives and the research ensembles firmly established, the new TRC 2 commenced in a nearly fully integrated manner, e.g., with RTTA 1 providing bibliometric and other data and for joint research with TRC 2, RTTA 2 incorporating questions dedicated to TRC 2 concerns into the public opinion survey fielded in the current year, RTTA 3 planning its major public engagement activity around city tours, RTTA 4 working together with TRC 2 an associated (unfunded) proposal to NSF for STIR City, and TRC 1 in essentially constant contact on issues of equity in urban sustainability. A recent change in team leadership – replacing Lim with Rawlings as co-leader of RTTA 3 – has allowed the retention of urban connections while introducing expertise in the study of capacity building. Moreover, TRC 2 has been highly integrated with engineering activities – particularly through a connection between post-doc Foley and CNS-FSE fellow Wender in Seager's lab – leading not only to numerous joint publications but also to a greater emphasis in and new directions toward "anticipatory LCA" in the Seager lab and in the Quantum Energy and Sustainable Solar Technologies ERC that has been funding the rest of Wender's work.

The Center's Visioning Workshop contributed to strategic planning for education and outreach as well. With respect to education, the Center implemented its Winter School in Jan 13. Reviews provided by the early career participants were very strong, and the school continued with a second full cohort in Jan 14. For this cohort, we reduced somewhat the funds expended from CNS-ASU, requesting that participants contribute some funds from their institutions (almost all of the domestically-based participants paid their own airfare). We will continue to wean participants progressively off of Center funding, aiming to establish a similar "pay-to-play" model that the Science Outside the Lab program developed.

CNS-ASU's strategic partnership with NISE Net has continued to strengthen, resulting in the Center's being named a "core partner" in NISE Net. After the nano mini exhibit and the collaborative work on training that resulted in the videos and face-to-face programs, CNS-ASU worked with NISE Net in the recent year to publish a printed guide to talking about societal issues in the museum context. CNS-ASU continues to make video communication an important focus of activities, and the Center has completed an overhaul of its website to show video, social media, etc., in a more attractive way. The Center's commissioned short video, related to the Nano and the City and equity themes, was completed last year, and we are in discussion about how to use it to seed more active outreach around the question of where nanotechnology is in *your* day. The Center's connection to filmmaker Regan Brashear reached fruition this year with the release of her film *Fixed: The Science/Fiction of Human Enhancement*, and the filmmaker Frank Theys continues to make progress toward his documentary on the STIR project. The short film derived from the design studio class and TRC 2 work has also received numerous viewings. The FutureTense documentary project is not dead but is significantly slowed due to funding challenges and "creative difficulties."

CNS-ASU outreach to the private sector – strengthened under post-doctoral fellow Davies, who planned and conducted the Center's first Private Sector Engagement workshop in May 11 – continued with strong private sector engagement in TRC 2's research activities, especially in developing the scenarios portrayed in the film about the future of Phoenix and the solicitation of comments back on it, and in RTTA 3's conduct of the Futurescape City Tours. While outreach in Washington, DC has suffered some setbacks because federal budget difficulties have distracted potential congressional partners like the Congressional Nanotechnology Caucus, the Center has been active through CSPO's Washington, DC office in hosting additional "New Tools" seminars by several CNS researchers. More on this collaboration, as well as video and private sector outreach, may be found in the **Outreach** section.

In the Center's renewal review, site visitors asked about the apparent mismatch between the huge list of Center participants accounted for in **Section 4, List of Center Participants** and the **List of Center Publications**, which seems small in comparison. The response, which the committee found appropriate but which we reiterate here, is that as the largest center dedicated to the study of the societal aspects of nanotechnology in the country and, likely, in the world, CNS-ASU sees itself as an important producer of public goods like networking and infrastructure (capacity-building) – as a good hegemon, in other words. While we identified "growth" as an important strategic goal in our 08 Visioning Workshop, we also limited the size and number of our formal external collaborations (subcontracts) in our renewal. Yet, by accounting for the participants in our capacity-building activities, we can provide a transparent account of the reach the Center has had. This reach has included a vast number of international scholars and practitioners who have visited the Center in a way akin to a user facility in which the Center's faculty, its conceptual tools, and its ongoing collaborations with scientists and engineers provide the infrastructure for work they cannot perform in their home institutions (see also **Section 13, Shared and Other Experimental Facilities**). Thus, the Center does not displace or dilute traditional deliverables like peer review with such activities but adds to them. The impacts and outcomes study should also provide some clearer insight into these issues.

CNS-ASU's partnerships with scientists and engineers continue to thrive. At the undergraduate level, InnovationSpace stands as a unique example of cross-functional collaborations among design, business and engineering. At the graduate level, we have transformed the PhD+ into a university-wide certificate program in Responsible Research and Innovation, and the training program in collaboration with ASU's NNIN node is, along with the activities derived from CNS-ASU and elaborated and evaluated in the associated EESE project, becoming a model for teaching societal and ethical implications (SEI) that was explored by more than 100 scholars at the SEI Congress, held at ASU in Nov 11 and co-sponsored by CNS-ASU. The associated STIR project is consolidating its findings, and an expansion of the STIR protocol that links embedded research activities through a more widespread network of sites to sustainable solar technologies has been introduced into a collaborative IGERT, the Solar Utilization Network, at ASU. The Center's collaboration with Honsberg's NSF-funded Quantum Energy and Sustainable Solar Technologies (QESST) ERC has continued, highlighted by CNS-Fulton School of Engineering graduate fellow Ben Wender's research on "anticipatory life cycle assessment" at the interface of the two centers. The Center also collaborated with Panchanathan's IGERT on Person-Centered Technologies and Practices for Persons with Disabilities (Miller is co-PI). With these awards, and the new award to Westerhoff from EPA on nano life cycle, CNS-ASU is partner to more than $30M in science and engineering funding at ASU. Outside of ASU, the Center received, in collaboration with Notre Dame, a small workshop award on the anticipatory governance of active nano-materials and nano-systems with CNS-UCSB and the two Centers for Environmental Implications of Nanotechnology at UCLA and at Duke. The Center took a hiatus from co-sponsoring the future-oriented *Emerge* workshop in the current year, but continues to support the Governing Emerging Technologies – Law, Ethics and Policy symposium, organized by Marchant in ASU's Sandra Day O'Connor School of Law.

In looking beyond the Center's ten-year funding from NSF, Guston and Fisher received in Oct 13 the $500K "Virtual Institute for Responsible Innovation" (VIRI) under NSF's Science Across Virtual Institutes program. While VIRI would allow the persistence and extension of some of the core research activities of CNS-ASU – particularly a vision of responsible innovation that embraces anticipatory governance – it would also allow its international network of collaborators to continue and expand. Selin is also pursuing an opportunity to continue and extend the Center's anticipation and deliberation activities through a Futures Initiative that may be sponsored by ASU's Global Institute for Sustainability (GIOS). Recently, she and Sarewitz have been granted $100K in seed funding to co-design an initiative within GIOS to amplify and mobilize future-oriented research and practice. The resulting proposal will be eligible for a multi-year award of several hundreds of thousands of dollars.

More significantly for the persistence of many of our educational innovations, however, is the prospect of the Next Generation – National Nanotechnology Infrastructure Network (NG-NNIN). Associate director for outreach Wetmore had been tapped by Stanford University, which led the incumbent proposal in the NNIN recompete, to be its coordinator for social and ethical implications, with Bennett as his associate. If successful, the next generation NNIN's SEI component, estimated at about $600K per year, would have included many of the formal and informal educational components that CNS-ASU has pioneered and extended them across the more than one dozen participating universities. However, NSF decided to make no award and instead provide some bridge funding and hold a new competition in a year or so.

More importantly still is an effort that PI Guston and senior investigator Sarewitz – as co-directors of CSPO – have been charged to begin by ASU President Michael Crow. Since opening at ASU in 2004, CSPO has been a research center that has also participated significantly in curricular activities – and CNS has been its largest project and test-bed. Following preliminary discussions with Crow and Provost Rob Page in Sp 14, Sarewitz and Guston have commenced planning for a reorganization of CSPO into a university-wide institute, a degree-granting and tenure-holding graduate school, and a broader array centers in addition to CNS held in consortium as the new "Consortium for Science, Policy and Outcomes." The relationship between this prospective change and CNS-ASU is terrifically important, as many people and activities initially associated with the Center will find a more permanent home in the new school. The school may be the tenure home of CNS-related faculty Guston, Sarewitz, Miller, Wetmore, Fisher and Selin, and it will also house the doctoral and master's programs that CNS influenced, and the certificate program it helped create. Second, the institute and the expanded capacity at CSPO will help extend the Center's emphasis on responsible innovation and anticipatory governance to new audiences at ASU and beyond. Planned partnerships with non-US institutions (Sussex, UCL) will revolve in part around themes of innovation, responsibility and sustainability – themes that CNS has made significant efforts to articulate through its current TRCs – and consolidated in the VIRI.

9. Research Program, Accomplishments, and Plans

RTTA 1: Research and Innovation Systems Analysis (RISA)

Personnel – faculty and senior participants

Jan Youtie (Georgia Tech, principal researcher, Enterprise Innovation Institute and adjunct associate professor of Public Policy) (team co-leader; GT Co-PI; CNS-ASU Co-PI)
Jose Lobo (ASU, associate research professor, School of Human Evolution and Social Change) (team co-leader)

Alan Porter (Georgia Tech, professor emeritus, ISYE and Public Policy)
Juan Rogers (Georgia Tech, associate professor, Public Policy)
Philip Shapira, (Georgia Tech, professor, Public Policy) (GT PI)
Deborah Strumsky (University of North Carolina, Charlotte, assistant professor, Geography)

Other Personnel: graduate students (4), undergraduate students (2), visiting scholars (3)
Graduate students: Sanjay Arora (Public Policy), Yin Li (Public Policy), Stephen Carley (Public Policy, PhD, December 2013)
Undergraduates: JJ O'Brien (Public Policy), Sahra Jabbehdari (Public Policy)
Visiting Scholars: Xiao Zhou (Beijing Institute of Technology, Management), Jing Ma (Beijing Institute of Technology, Management), Arho Suominen (Senior Scientist, VTT Technical Research Centre of Finland)

Goals: The overarching goal of RTTA 1/RISA is to characterize the technical scope and dynamics of the NSE enterprise and the linkages between it and a variety of public values and outcomes. A major research theme – RTTA 1/1: Organization, Structure, and Trajectories of Emerging Nanoscience – characterizes the NSE enterprise and its dynamics through data-mining techniques such as bibliometric and patent analysis, as well as through text-mining, interviews, and other methods. The strategic areas of emphasis are: the organization, structure and trajectories of emerging nanoscience and nanotechnology enterprise and application. A second major activity – RTTA 1/2: Nanotechnology Enterprise and Applications –develops real-time strategic intelligence about nanotechnology commercialization in the US and globally, through methods including those above but also through the creation of a corporate panel data set.

Research Accomplishments and Plans, RTTA 1/1

RTTA 1/1 Organization, Structure, and Trajectories of Emerging Nanoscience originally constructed a large-scale set of global databases of nanotechnology research publication records comprised of 1.6 million articles including more than 1.1 million from the Web of Science's Science Citation Index (SCI) covering the period 1990-2013. In addition to the publication dataset, we also have developed a patent database that includes 90,000 nanotechnology patent documents (from 71 patent offices worldwide including USPTO, EPO, WIPO, Chinese State Patent Office) and 91 countries covering the 1990-2011 (January) time period.

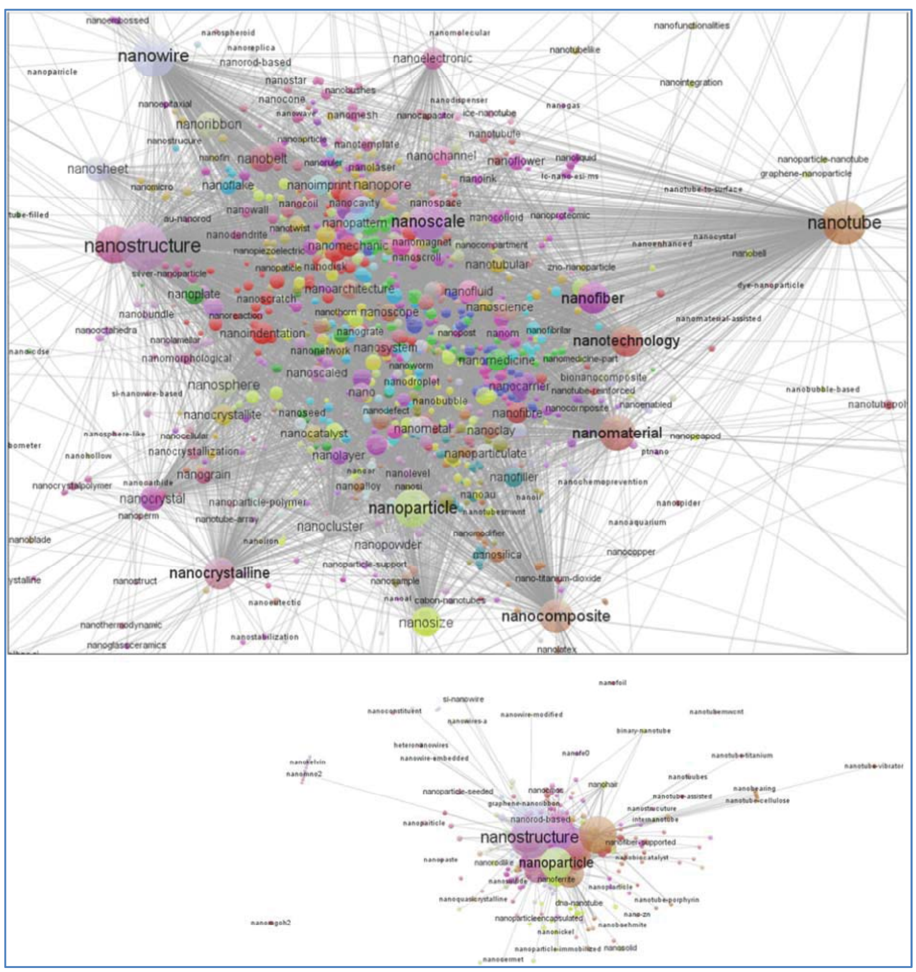
The database originates out of a two-stage bibliometric search method that was developed and published in Porter, Youtie, Shapira, Schoeneck (2008) and updated in Arora, Porter, Youtie, Shapira (2013). This method is emerging as a public tool that other research groups are using or adapting. The former article describing the database has attracted 231 citations in Google Scholar (as of March 10, 2014) and 101 citations in the Web of Science. Researchers associated with the

Euro Nano Observatory compared six search approaches in preparation for its research monitoring activities and found that five of the six, including our approach, converge on a similar definition (Huang et al. 2008). As a result, the Euro Nano Observatory (a Framework Programme 7 project involving 16 partners from 10 European nations; see http://www.observatory-nano.eu/project/) is following our search approach as its benchmark for monitoring nanotechnology R&D.

A major effort in YR 9 is a review of trends in nanotechnology research and innovation systems in light of changes to the emerging nanotechnology domain. We submitted a paper, published in the *Journal of Nanoparticle Research* that used network analysis over three time periods to examine the emergence of a collectively shared vocabulary in nanotechnology.

A second major effort involved the development of an enhanced "map of patents." This patent mapping approach considers how patents cite one another may help researchers better understand the relationships between technologies – and how they may come together to spur disruptive new areas of innovation. A base map comprised of 466 re-constituted patent classes grouped into 35 factors forms a base map and nanotechnology-publications are overlaid to show areas of technological distance and similarity. This work was cited by NSF's Science 360 and on the front page of nsf.gov, MIT Technology Review, WIRED UK ("InfoPorn"), esciencenews.com, newswise.com, eurekalert.com, R&D Magazine, space-travel.com, livemint.com, futurity.org, interdisciplinaryscience.net, pcb007.com, circuitnet.com, entrepreneur.com, reuters.com.

Selected findings from this research in the reporting year include:



In examining the emergence of a shared nanotechnology lexicon, we found that (1) nano-prefixed terms moved from accounting for fewer than 20% of articles in the early 1990s to accounting for 80% of articles by 2010, (2) nano-prefixed terms has moved from comprising a network that is densely organized around a few common nano-prefixed terms such as ''nanostructure'' in 2000 to becoming less dense and more differentiated in using additional nano-prefixed terms while continuing to coalesce around the common nano-prefixed terms by 2010 (Figure represents keyword group co-occurrence map, 2010, top map zooms on the dense center of the 1,447 groups and 7,200 edges in the bottom map) and (3) the share of nanotechnology papers oriented toward biomedical and clinical medicine applications has risen from just over 5 % to more than 11 % (Arora, Youtie, Carley, Porter, Shapira 2014).

- Eighty-five percent of patent maps cross administrative boundaries. Graphene is primarily concentration in the metals and semiconductor area of the map (Kay, Newman, Youtie, Porter, Rafols, 2014).
- Graphene applications involve companies that specialize in the technology and those who offer a wider range of applications (Arora, Ma, Gao, Shapira, Youtie 2013).
- The building construction sector could benefit greatly from manufactured nanotechnology products, but although awareness of these products is higher than expected, adoption of these products is limited by issues around the applicability of these products to project-based outcomes (Arora, Foley, Youtie, Shapira, Wiek, 2014).
- Green nanotechnology patents have the same number of inventors as the average green patent, but more claims, more citations, and more technology codes and thus may be more "inventive" or "novel" (Lobo and Strumsky in preparation).

Several new research papers are in the pipeline, including:

- The share of publications in the active nanotechnology and beyond domain has increased modestly, suggesting that a portion of nanotechnology research and patents are engaged in next generation R&D (Suominen, Li, Shapira, Youtie, in process).
- Social science research in the nanotechnology domain has risen by more than an order of magnitude from 2008 to 2012 (Carley, Youtie, Shapira, Porter, in process).
- Nanotechnology publications with authors from university, industry, and government organizations have greater value than those with less diverse sectoral participation, controlling for discipline, total number of publications, and other factors (Carley, in process).
- China surpasses the US in publications by 2010 and in citations by 2013 (Li, Arora, Youtie, Shapira, in process for the PCAST review of the National Nanotechnology Initiative). One explanation of the rise in China's citations is that there is a clubbing effect, where leading scientists in China reference one another's work (Tang, Youtie, Shapira, under review).
- Nano-enabled drug delivery has multiple pathways for innovation (Porter et al, in process).
- Preliminary work is underway on synthetic biology, including the development datasets of scientific publications excerpted from the Science Citation Index, and relevant publications in the social sciences and humanities.

Research Program, Accomplishments, and Plans, RTTA 1/2

One activity of RTTA 1/2 is the creation of a corporate panel of nanotechnology corporate enterprises. A corporate panel is a set of corporate enterprises which have "entered" nanotechnology as evidenced by a nanotechnology publication authored or co-authored by an individual in a corporate enterprise and/or a nanotechnology patent assigned to a corporate entity. The notion behind the corporate panel is to track changes in panel companies nanotechnology activities over time. We developed a database of 120,000 records (57,000 publications and 63,000 patents from 18,000 companies). This database was used to select the US portion of the corporate panel, which is comprised of 125 large US nanotechnology companies and 125 small and medium-sized US nanotechnology enterprises (SMEs). A large company is defined as one that is mentioned in the EU Industrial R&D Investment Scoreboard and the Global Forbes 2000. Our corporate panel includes 125 large US nanotechnology enterprises, which fall (based on their industry classification) into six different segments: (1) industrial equipment, (2) electronics/energy/ICT, (3) health/medicine, (4) materials/chemicals, (5) transportation/aerospace, and (6) food/other consumer. The panel also includes 125 SMEs which fall (based on their industry classification or market offerings) into the first four segments; we did not find a sufficient number of SMEs in the latter two segments to populate them. These 250 large and small US nanotechnology enterprises have been matched with companies in the same segments outside the US.

This panel has been used to address research questions such as: (1) What kinds of linkages do these companies have with universities and other research institutions? (2) How is strategy for introduction of nanotechnology-enabled products and materials construed in the face of uncertainty? (3) Where do these companies and their products fit in the global supply chain and where is inventive activity geographically located? (4) What international boundaries are these supply chains crossing and what role do consumer values and demand play? Three publications in this line of research are:

- One in ten small and medium-sized nanotechnology firms are involved in a merger or acquisition; these mergers and acquisitions involving nanotechnology firms provide complementary capabilities and serve as an innovation source to larger acquiring companies (Youtie and Kay, 2014).
- Two different strategic approaches are employed by small and medium-sized enterprises to enter the domain of nanotechnology: an early-entry strategy is associated with nanotechnology research and discovery and possibly use of nanotechnologies to enhance properties of products; and a later-entry strategy associated with a strong focus on intensive patenting activity (Kay, Youtie, Shapira, 2013).
- A segment of small and medium-sized enterprises chooses to publish rather than patent in nanotechnology (Li, Youtie, Shapira, under review).

A second activity of RTTA 1/2 is characterizing the nature of the nanotechnology enterprise and its applications through patent analysis. A team consisting of new RTTA 1 co-leader Lobo at ASU and new other senior personnel Strumsky (at North Carolina, Charlotte) uses two new patent databases constructed with other NSF support – one on patent applications submitted to the U.S. Patent Office matched with granted patents, and the other a database on the technology codes used by the Patent Office to classify the technologies utilized by a patented invention – Lobo and Strumsky have calculated patent success rates and measured the technological complexity of nanotechnology patents. Results from this research, indicating that patent applications in the area of nanotechnology have a lower success rate than the norm and are more technologically complex than the average patent, were presented at the Transatlantic Conference on nanotechnology held at Georgia Tech in Mar 10.

Lobo and Strumsky have also examined the presence of nanotechnology in US patents classified as "green." The classification of US patents as green is one that the research team has developed previously based on one produced by the Patent Office but augmented after discussions with personnel from the Patent Office, NSF, and the White House Office of Science and Technology Policy. The results from this work are included as part of a comprehensive report on the "Green Economy" which the Brookings Institution released in Jul 11 and a Brookings working paper on the "geography of green patenting." Lobo and Strumsky are preparing a report on "How Green is Nano?" as a CNS-ASU report. Preliminary results indicate that green nanotechnology patents have the same number of inventors as the average green patent but more claims, more citations received, and more technology codes, suggesting that these patents are substantially more inventively novel than the average green patent.

Plans in this work involve the use of web-based sources such as company websites and social media. For example, we plan to assess the social networks that firms in the graphene domain acquire as a result of their participation in twitter.

<u>Contributions to "ensemble-ization" or other center-wide activities</u>.

RTTA 1/1's co-authored publications with TRC 2 on drivers of adoption of manufactured nanotechnology products in the building construction industry began through a collaboration between doctoral students in RTTA 1/1 (Arora) and TRC 2 (Foley) at an CNS-ASU All Hands meeting in 2010. A presentation at the 2009 S.NET Conference workshop led to an article on environmental, health, and safety in nanotechnology published in 2011 which is co-authored with a CNS-ASU PhD+ graduate. This publication would have never been possible without access through CNS-ASU to the CNS-ASU graduate student who is a scientist in the nanotechnology environmental, health, and safety area.

In addition, there are several other activities to which RTTA 1/1 has contributed:

- RTTA 1/1's organization of the EU-US Transatlantic Workshop on Nanotechnology Research and Innovation Policy included two researchers from CNS-ASU, including one from RTTA 3.
- RTTA 1/1's co-authorship of a paper with RTTA 2, based on merging data from the scientists' survey with information from the global nanotechnology publication database on the presence of nanotechnology environmental, health, and safety entries in the cited references of articles co-authored by these scientists, which appeared in *Research Evaluation* in 2011.
- RTTA 1/1 collaborated with a then CNS-ASU PhD+ graduate student on a paper examining nanotechnology environmental, health, and safety research and diffusion, which appeared in the *Journal of Nanoscience and Nanotechnology* in 2011
- RTTA 1/1 researchers contributed 3 chapters to TRC 1-led *Yearbook* and provided bibliometric data for TRC 1 case studies;
- RTTA 1/2 is examining the "green" nature of nanotechnology applications in conjunction with TRC 2.

In addition, RTTA 1/1 (Shapira, Youtie) shared their publication and patent datasets with colleagues at CNS-Santa Barbara and attended the All Hands meeting for CNS-Santa Barbara, January 31-February 1, 2014 to share research directions and plans for joint research. RTTA 1/1 also co-developed and submitted a joint proposal to the NSF STS program; although the proposal was not funded, it did represent a productive collaboration.

RTTA 2: Public Opinion and Values

Personnel – faculty and senior participants

Dietram A. Scheufele, RTTA 2 co-leader (Wisconsin, John E. Ross Professor, Life Sciences Communication)
Elizabeth A. Corley, RTTA 2 co-leader (ASU, Associate Professor, School of Public Affairs)

Dominique Brossard (Wisconsin, Professor and Department Chair, Life Sciences Communication)
Michael A. Xenos (Wisconsin, Associate Professor and Department Chair, Communication Arts)

Other Personnel: post-docs (0), graduate students (9; 2 paid, 7 not), undergraduate students (0)

Goals: The overall goal of RTTA 2 POV is to monitor, among both the public and scientists, the understanding of and values relating to NSE and its potential societal outcomes, track these variables over time, and examine the role of the media in reflecting and influencing them. POV comprises a set of inter-related research themes around the public, NSE researchers, and the media. RTTA 2/1 Public Opinion Polling is the major project, conducting nation-wide public opinion polls to understand, at an aggregate level, the public's knowledge of and values regarding nanotechnologies. RTTA 2/2 Scientists' Opinions and Values is a research theme that conducts polls of NSE researchers to understand their perceptions and values regarding nanotechnologies. RTTA 2/3 Media Influence is a research theme that tracks media stories of nanotechnologies and, using a quasi-experimental design, attempts to understand how various media frames for nanotechnology stories can influence the knowledge and opinions of the public.

Research Accomplishments and Plans, RTTA 2/1

As part of the Public Opinion Polling research, Corley & Scheufele have capitalized on their experiences with some of the earliest public opinion surveys on NSE (e.g., Scheufele & Lewenstein, 2005) and have continued to develop and refine ways of measuring attitudes, information seeking, and policy stances. This methodological work is a necessary condition for doing sophisticated basic research. But it has also allowed the POV team to assist other researchers across the globe (e.g., Université de Caen Basse-Normandie, France; Poznan University of Economics, Poland; and Dublin City University, Ireland) by sharing instruments and expertise. During YR 9 of the CNS-ASU grant, the POV team has also been able to provide real-time feedback to policy makers when they need specific information about policy-relevant public attitudes.

RTTA 2/1 has completed two general, full-scale public opinion data collections: in Jul. 2007 and Jan. 2012 and is preparing to field an instrument that will collect data in Apr. 2014. The 2007 survey was a CATI survey with a combined RDD and listed household sample conducted May – Jul 07 (N=1,015; margin of error, +/- 3%). The 2012 survey was conducted by Knowledge Networks (N=2,806; margin of error, +/- 2%), and it embedded experimental manipulations into a nationally representative online survey. This new approach has three analytic advantages: First, it allows us to examine different subpopulations – serving goals of TRC 1 by including those that have been traditionally underserved by science communication efforts (defined by gender, age, ethnicity, or other factors). Second, the large sample is divided into three, nationally representative samples, each focused on a separate technology (nanotechnology, synthetic biology, and nuclear energy) to help us examine the processes of opinion formation and market dynamics surrounding nanotechnology in comparison to other technologies. Third, we embedded a series of experimental manipulations in each of the issue-specific subsamples. By drawing on the external validity of nationally representative samples and the internal validity of random-assignment experiments, we are able to capitalize on the advantages of both methods and build a deeply granular understanding of the cognitive and affective processes that lay publics use to make sense of emerging technologies. The 2014 survey will be conducted by GfK Custom Research, LLC (formerly Knowledge Networks) and embed experimental manipulations into a nationally representative online survey (N=3,000). Each of the three manipulations will be focused on a unique technology (nanotechnology, synthetic biology, and hydraulic fracturing) so we are able to compare opinion formation about nanotechnology to related technologies and changes in views about these technologies since the previous data collection (2012).

We also continue to coordinate our data collections with related efforts at Wisconsin, Singapore, Rutgers, Universität Hamburg, and elsewhere in order to build comparable data sets that can be used for comparative quantitative work down the road. Because RTTA 2/1 has played a prominent role in sharing these innovations with other scholars, the leaders of the POV team serve as consultants or co-PIs on other related NSF and USDA grants. This methodological outreach is being formalized by RTTA 2/1 researchers through the formal archiving and sharing of data collection instruments.

RTTA 2/1 has developed several analytical themes in its research, including religiosity and public acceptance of nanotechnology, widening knowledge gaps about nanotechnology, and risk and benefit perceptions about nanotechnology. While the former two have inspired interactions with TRC 1, the latter has resulted in interactions with RTTA 2/2 and with RTTA 1. In YR 9, publications from the 2007 and 2012 data collections have continued. Analyses from the Jan. 2012 data collection have continued to result in numerous conference presentations, as well as a number of journal articles that are currently published, under review, or in preparation. The data from the Jan. 2012 survey also formed the basis of the dissertation of Michael Cacciatore, now a professor at the University of Georgia, who earned his PhD in August 2013.

Religiosity and Public Acceptance of Nanotechnology

As with many other political and scientific issues, citizens rely on cognitive shortcuts or heuristics to make sense of issues for which they have low levels of knowledge. These heuristics can include predispositional factors, such as ideological beliefs or value systems, and also short-term frames of reference provided by the media or other sources of information. By combining CNS-ASU public opinion survey data from the US with Eurobarometer surveys about public attitudes toward nanotechnology in Europe, Scheufele, Corley and colleagues (2009) concluded that respondents in the United States are significantly less likely to agree that nanotechnology is morally acceptable than respondents in many European countries. These moral views correlated directly with aggregate levels of religiosity in each country, even after controlling for national research productivity and measures of science performance for high-school students. Building from this work, the Jan. 2012 data collection examined how American audiences process moral vs. amoral media frames related to emerging technologies. Results from this project suggest that we may be witnessing both framing and boomerang effects depending on the degree to which media frames match value predispositions, including religiosity and political ideology.

Widening Nanotechnology Knowledge Gaps

RTTA 2/1 research on the change in nanotechnology knowledge among the public over time has generated some particularly important results for TRC 1 and outreach. In particular, Cacciatore, Scheufele, & Corley (forthcoming) found that there are widening gaps in knowledge about nanotechnology since 2004 between the least educated and most educated members of the US public. Americans with at least a college degree have shown an increase in understanding of the new technology, while knowledge about nanotechnology has declined over time for those with education levels of less than a high school diploma. Closing these informational gaps among public audiences is a necessity, especially in light of a US budget that has reduced spending for "educational and social dimensions" of nanotechnology in recent years. There is a real urgency to find ways of communicating effectively with all groups in society. Unless researchers find ways to close these learning gaps, we may create two classes of citizens – those who are able to make informed consumer and policy choices about these new technologies, and those who simply cannot. Cacciatore, Scheufele, & Corley also concluded that the Internet is one of the most effective methods in closing gaps and informing the less educated about nanotechnology.

Risk and Benefit Perceptions

RTTA 2/1 research has produced multiple, continuous streams of research that have contributed to the literature about how nanotechnology was covered in media and how audience characteristics interact with these messages to shape attitudes about nanotechnology. For example, Scheufele and colleagues (2007) demonstrated that nanoscientists are more optimistic than the public about the potential benefits of nanotechnology; however, for some issues related to the environmental and long-term health impacts of nanotechnology, nanoscientists were significantly more concerned than the public. Therefore, RTTA 2/1 researchers concluded that nanotechnology may be one of the first emerging technologies where researchers have observed this trend of scientists' being more concerned about some risks than the public. Building on this research, more fine-grained analyses have shown that when making risk judgments, nanotechnology experts use trust in scientists to make decisions while the public uses religious beliefs as heuristic cues. Although deference to scientific authority, science media use, and trust in scientists shape perceived benefits in both scientists and the public, these heuristic cues influence public perception to a larger extent than experts' perceptions.

RTTA 2/1 has also examined the changing nature of risk and benefit perceptions to conclude that as the field of nanotechnology matures, public opinion research focused on judgments about abstract risks and benefits, rather than attitudes toward specific applications, is less useful. Recent RTTA 2/1 research shows that individuals who associate nanotechnology with particular areas of application, such as the medical field, take risk perceptions much more into account when forming attitudes than respondents who do not make these mental connections. Therefore, the RTTA 2/1research program increasingly focuses on assessing measurement tools for the field of public opinion about emerging technologies more broadly.

Research Accomplishments and Plans, RTTA 2/2

RTTA 2/2 has also completed two national-level nano-scientist surveys: in Jul 07 and Oct 11. The 2007 survey was a mail survey of leading US nano-scientists (N=363; AAPOR RR-3: 39.5%). The 2011 data collection was conducted as a mail survey of leading US nano-scientists (N=444; AAPOR RR-3: 31.6%). The content of the 2011 survey was slightly different from the 2007 survey by focusing on more granular perceptions about the risks and benefits of nanotechnology, nanoregulation, nanotech worker safety issues, public engagement, and the ethics of nanotechnology laboratory practices. By combining funds from CNS-ASU and the Kellett mid-career award given to Scheufele at UW, we will be able to conduct an additional scientist survey in 2014. Planning for this survey will start during the summer.

Risk, Benefits, and Regulation of Nanotechnology

The RTTA 2 team considers regulation of nanotechnology to be an important area for study because even though there is a high degree of scientific uncertainty about the risks of nanotechnology, policy-making cannot be placed on hold until risk assessments are complete. In the absence of risk assessment data, decision makers often rely on scientists' input about risks and regulation to make policy decisions. RTTA 2/2 research has shown that nanoscientists are more supportive of regulating nanotechnology when they perceive higher levels of risks; yet, their perceived benefits about nanotechnology do not significantly impact their support for nanotech regulation. The research also finds that male nanoscientists are less supportive of nanotech regulation than their female peers and materials scientists are more supportive of nanotechnology regulation than scientists in other fields.

In addition, Corley & Scheufele concluded that the leading U.S. nanoscientists see the areas of surveillance/privacy, human enhancement, medicine, and environment as the nanotech application areas that are most in need of new regulations. Based on the 2007 survey results, Corley, Scheufele and Ho (2009) found that in addition to risk perceptions, nano-scientists use their economic and social values to make decisions about nanotech regulation, and that surveillance/privacy, human enhancement, medicine, and the environment are the application areas in which nano-scientists see the greatest need for new nanotechnology regulations.

Also, Kim, Corley & Scheufele (2012) used the 2007 results to explore the perceptions of nano-scientists regarding the regulation of nanotechnology, with a particular focus on the governmental level (local, national, or international) at which the scientists believe nanotechnology regulation should be implemented. This regulatory discussion is important because international regulations are often difficult to adopt and implement; yet, local or state-level regulations could lead to the nanotechnology equivalent of the Pollution Haven Hypothesis (PHH). The results indicate that some scientists support local-level nano-regulations, but most scientists support the regulation of nanotech at the national or international level.

Kim, Corley & Scheufele (2012) found that there are three distinct categories of nano-scientists that have unique perspectives on regulation: "cautious innovators," "nano-regulators," and "technology optimists." The "cautious innovators" are more supportive of implementing nano-regulations at the local level. Additionally, these scientists think that public opinion is more important than scientists' opinions for research decision-making and that we depend too much on science and not enough on faith. This group is also more likely than their peers to support the regulations of academic nanotech research. The second group of scientists is the "nano-regulators." These scientists are more likely to say that the government should protect the public from unknown nanotech risks. Also, these "nano-regulators" are more supportive than their peers of nano-regulations at the national and international level. Lastly, they are more likely to support the regulation of commercial nanotech research. While many scientists acknowledged the importance of nanoregulation, some scientists are less supportive of restricting nanotech advancements using regulations – i.e., the "technology optimists." These scientists are more likely to think that advancing nanotechnology is more important than protecting society from the potential nano-risks. Also, these scientists tend to think that scientists know best when it comes to making scientific decisions that can impact the public.

Perceptions of Media Coverage

Exploring public perceptions and scientists' perceptions about media coverage of nanotechnology – as well as the public communication of research – were also key focal areas for the RTTA 2/2 team in the 2007 data. Using the 2007 survey results, Corley, Kim and Scheufele (2011) also explored leading U.S. nano-scientists' perceptions about media coverage of nanotechnology and the public communication of research findings, concluding that leading U.S. nano-scientists perceive an important connection between the public communication of research findings and public attitudes about science. Additionally, there is a significant relationship between the scientists' perceptions about media coverage and their views on the timing of public communication; scientists with positive attitudes about the media are more likely to support immediate public communication of research findings, while others believe that communication should take place only after research findings have been published through a peer-review process. In addition, leading U.S. nano-scientists tend to view media coverage of nanotechnology as less credible and less accurate than general science media coverage. These results indicate that leading U.S. nano-scientists do feel a sense of responsibility for communicating their research findings to the public, but attitudes about the timing and the pathway of that communication vary across the group.

An Updated View of Nanotech Regulation Perceptions

The RTTA 2/2 team is currently analyzing and publishing from the 2011 scientist survey. Corley & Scheufele recently published an article in a special issue of *Review of Policy Research* that uses the 2011 data to explore nano-scientist perceptions about existing nanotechnology policies, the development of new nanotech policies, levels of governmental regulation, current and future risk levels for public exposure to nanomaterials, we well as mandatory policies about the implementation of safe lab practices for federally funded nano-research.

Perceptions about Worker Safety, Gender, and Social Responsibility

In 2013, Corley, Kim & Scheufele analyzed the 2011 nanoscientist survey data to publish an up-to-date view of leading U.S. nanoscientists' perceptions about the regulation of nanotechnology. In particular, this research explored the leading nano-scientists' perceptions about existing nanotech policies, the development of new nanotech policies, and mandatory policies about the implementation of safe lab practices for federally funded nanoresearch. The conclusions of this research indicated that nanoscientists are more likely to say that commercial nanotech research should be regulated than academic nanotech research. Additionally, the leading U.S. nanoscientists believe that lab directors in both university and industry nanotech settings have a strong ethical obligation to protect their workers from unhealthy exposure to nanomaterials. In addition, many of the scientists believe that federal funding of nanotech research should be linked to formal guidelines that would protect workers from exposure to nanomaterials.

Research Accomplishments and Plans, RTTA 2/3

Finally, RTTA 2/3 continues to analyze media content in three different outlets. First, we continue to use the infrastructure built during the first five years of CNS-ASU funding to analyze in real time content data from small, medium-sized and large newspapers in the US. Papers from this work appeared in disciplinary journals (e.g., *Journalism & Mass Communication Quarterly*) and also in outlets specific to particular scientific fields (e.g., a piece on food nanotechnology in *Appetite*). Second, RTTA 2/3 partnered with the UW NSEC on Templated Synthesis and Assembly at the Nanoscale to purchase access to Crimson Hexagon. This software license allows us to analyze content streams in real time from all online and social media outlets (including Twitter, Facebook, blogs, online newspaper sites etc.). RTTA 2/3 continues to collect and mine data for traditional media, but our collaborations with the UW NSEC have allowed us to provide real-time insights into the ongoing debates around nano that are unique in the field of the social studies of science. An article comparing online and offline media environments was recently published in *New Media & Society*. Finally, students at UW have been using content analytic tools we built as part of CNS-ASU to branch out into other fields of research. Maria Stubbings worked on a content analysis of media coverage of gene patenting in the US; she defended this work in May of 2012. An article examining Twitter discussions surrounding nanotechnology was published in the *Journal of Nanoparticle Research*, and an analysis of social media content is included in Cacciatore's dissertation project.

Contributions to ensemble-ization or other Center-wide activities

RTTA 2/2's study of nanotechnology risk perceptions has led to collaborative work with RTTA 1 (specifically Youtie & Shapira) to better understand the relationship between societal perspectives held by nano-scientists and their publication actions (Youtie et al. 2011). This collaborative research between RTTA 1 and RTTA 2/2 has explored the relationship between scientists' risk perceptions about nanotechnology and their actions in citing nanotechnology environmental, health, and safety (EHS) publications. RTTA 2 has also collaborated with the Social Implications of Nanotechnology Group, part of the University of Wisconsin Nanoscale Science and Engineering Center (NSEC). These collaborations can be seen in many of the publications and conference presentations noted below.

Wisconsin has also been working on assessing the impacts of CNS-ASU on broader public and policy discourses. This work takes advantage of research infrastructures we have been building over the last eight years – partly in collaboration with thr the UW Nanoscale Science and Engineering Center on Templated Synthesis and Assembly at the Nanoscale at UW-Madison (UW-NSEC) – for tracking media content, blog posts and communications on social media platforms (Twitter, Facebook, etc.).

Using these infrastructures, we have begun to track online (Runge et al., forthcoming) and offline (Choi, Dudo, & Scheufele, 2013; Dudo, Choi, & Scheufele, 2011; Dudo, Dunwoody, & Scheufele, 2011) discourses about nanotechnology, especially as they relate to CNS and CNS-related activities. We use three commercial software packages that allow us to track various forms of communications in real time. Using a combination of the Lexis Nexis (licenses through UW-Madison) and Vantage Point (licensed through CNS-ASU) software packages, we are able to extract large amounts of traditional media content into an electronic data base that allows us to content analyze it using computer-based or human coding. We will also use a collaborative agreement (funded partly through CNS-ASU and UW-NSEC) with Crimson Hexagon, a startup headed by Harvard's Gary King, which gives us access to their software at a deeply discounted rate. Crimson Hexagon is a software that extracts linguistic patterns from small samples of online/social media content identified by human coders as being representative of particular types of content. It then develops generalizable algorithms from these patterns, and uses them to track the underlying content in every captured

Tweet, Facebook post, or blog. In other words, computer algorithms inductively determine the patterns of underlying content identified by human coders, and then apply the learned patterns for large scale data processing.

The combination of these different tools allows us to track all discourses surrounding nanotechnology in a comprehensive and real time fashion. In particular, we will be able to focus on our analyses on at least three different aspects.

First, we will continue to track the amount of coverage in traditional news channels and discussion on various online (social media) platforms. Second, will track the sentiment or types of discourses surrounding nanotechnology. This will focus on sentiments, such as expressions of uncertainty or the risks of benefits of nanotechnology, as they relate to nanotech more generally, but also to discussions or media coverage surrounding CNS more specifically. Do Tweets or blog posts surrounding CNS activities, for instance, reflect particular activities or aspects of CNS? Third, and most importantly, the comprehensive real-time tracking of online and offline content will also allow us to examine how (a) regional differences and (b) CNS activities – especially if coordinated across different sites – are received and multiplied by lay audiences and journalisms in traditional media and through online channels. This particularly relevant since some of our initial research on Twitter suggests that even the presence of NSF-funded Nanoscale Engineering Centers (NSECs) in a specific state can significantly influence the amount of Twitter traffic in a region. Our analyses will expand on this idea and track online traffic surrounding particular sites, but also before and after events, such as Nano Days in collaboration with NISE Net or related coordinated events. We have completed preliminary analyses for Twitter and will soon move into the full analysis stage for all other areas.

RTTA 3: Anticipation and Deliberation

Personnel – faculty and senior participants

Cynthia Selin, RTTA 3 co-leader (ASU, assistant professor, CSPO, School of Sustainability)
Kelly Rawlings, RTTA 3 co-leader (ASU, assistant research professor, School of Public Affairs)

Prasad Boradkar (ASU, associate professor, School of Design)
Adelheid Fischer (ASU, Manager, InnovationSpace, School of Design)
Sidnee Peck (ASU, program manager, W.P. Carey School of Business)
Angela Pereira (European Commission, Joint Research Centre)
Roopali Phadke (associate professor, Macalester College)
Thad Miller (assistant professor, Portland State University)
Gretchen Gano, (lecturer and research fellow, Center for Public Policy and Administration, University of Massachusetts Amherst)
David Tomblin (Director of Science, Technology and Society Program at University of Maryland, College Park)
Kevin Jones (senior research scientist, University of Alberta)
Krista Harper (associate professor, Anthropology and Public Policy, Amherst College)

Other Personnel: Post-docs (2); grad students (3 at ASU; 8 at UMass; 3 at Macalester College; 4 at Virginia Tech; 1 at Macalester; 3 at Portland State University; 4 at Univ. of Alberta); undergraduates (9 in InnovationSpace at ASU; 1 at Macalester).

Goals: As a whole, RTTA 3 problematizes conventional deliberative approaches to anticipation that unreflexively predict technological outcomes. Instead, this research pursues anticipatory governance by honing in on future-oriented methods informed by plausibility (Selin 2011; Ramirez & Selin 2014) and drawing on STS perspectives path dependency, co-production and responsible innovation.
RTTA 3 consists of four tightly integrated approaches that address research, education, and outreach. RTTA 3/1 Futures of Foresight explores and assesses alternative approaches to imagining plausible nano-enabled futures. RTTA 3/2 InnovationSpace is a collaborative undergraduate design course among ASU's Schools of Design, Engineering, and Business in which transdisciplinary teams of students create product designs, marketing plans, and engineering models of potential products within a framework of responsible innovation. This year's focus is on children's health and safety. RTTA 3/3 Probing Future-Oriented Deliberation is plans to probe in experimental settings the frameworks, inputs, structures and qualities of future-oriented deliberation. RTTA 3/4 Futurescape City Tours (FCT) builds on the foregoing to implement a large-scale citizen engagement activity that includes independent and joint deliberation of six groups of locally representative lay citizens from across the US on issues related to nanotechnology and the city.

The major focus for YR 9 is RTTA 3/4 with sustained support of InnovationSpace (3/2).

Research Accomplishments and Plans, RTTA 3/1

The **Plausibility Project** seeks to better understand the meaning and significance of the concept of plausibility through questioning the ways individuals and communities know, explore, assess and shape futures across time, cultures and professional practices. In YR 9, Selin and Angela Pereira of the Joint Research Centre of the European Commission, co-edited a special issue in the *International Journal for Foresight and Innovation*. In addition to the special issue, Selin and Rafael Ramirez of University of

Oxford completed an article on the etymological history of plausibility and its relevance for scenario planning for *Foresight*.

RTTA 3.1 explores and assesses alternative approaches to imagining plausible nano-enabled futures. In recent years, CNS-ASU researchers have honed in on the notion of 'mediated futures' to systematically account for practices of anticipation that capture the affective and sensual, moving beyond discursive representations of alternative futures (Davies et al 2013). CNS's former post doctoral scholar Davies (now with University of Copenhagen) was in YR 9 awarded the prestigious Marie Curie Fellowship to pursue work on 'making and hacking' derived from RTTA 3.1 research.

In light of Selin's sustained interest in **Mediated Futures**, she was invited in YR 9 to co-convene the Oxford Futures Forum, an international gathering of academics and practitioners focused on scenarios and anticipation. Since 2005, the Oxford Futures Forum (OFF) has enabled generative dialogue, productive collaboration and deep reflection on interdisciplinary concerns between two established communities of thought and practice, one the scenarios community and the second representing a theoretical perspective, which for the 2014 Forum is thinking, which builds on RTTA 3's *Emerge* event (2012).

Research Accomplishments and Plans, RTTA 3/2

InnovationSpace is an entrepreneurial joint venture among the Herberger Institute for Design and the Arts, Ira A. Fulton Schools of Engineering, and W.P. Carey School of Business at Arizona State University. The goal of this transdisciplinary education and research lab is to teach students how to develop products that create market value while serving real societal needs and minimizing impacts on the environment. The two-semester InnovationSpace course satisfies the studio, capstone and thesis requirements for senior majors in each unit. In addition, many of the students are Barrett Honors College students and write their honors theses about their InnovationSpace work. In the course, cross-functional teams of students drawn from industrial design, visual communication design, business and engineering use a product-development model known as Integrated Innovation to research, develop, test and refine real-world product concepts for paying sponsors including, in recent years, CNS, Intel, Disney, and Herman Miller. Since 2006, CNS-ASU has supported the work of three transdisciplinary teams (a total of 12 students) annually.

CNS-ASU has partnered with InnovationSpace, led by Boradkar to investigate nano-based technologies that ensure the freedom, privacy and security of citizens (AY 06-07), to visualize socially beneficial opportunities for nanotechnology in the areas of human health and enhancement (AY 07-08), to develop product concepts that utilize nano-enhanced solutions for ensuring equitable access to clean energy (AY 08- 09), to develop product concepts that utilize nano-enhanced solutions for addressing urban sustainability in relation to waste management, energy efficient transportation and energy awareness (AY 10- 11), address public health with special emphasis on clean water, safety of emergency services, and drug abuse prevention, to address the problems of household and office waste, indoor pollution and the urban heat island effect (AY 12-13). This year, students are looking at child safety in urban environments, thus rounding out a comprehensive look at urban systems. Outcomes from InnovationSpace include not only invention disclosures made to AZTE (15 from previous years and three more expected this year), but also spectacularly detailed documentation of the student-led innovation process known as Innovation Proposals. These include summaries of user research, product renderings and prototypes, engineering specifications, branding and communication strategies, ecological impact assessments and business plans. Students in the program are also introduced to (often nano-related) concepts of biomimicry as a means of developing more environmentally-responsible product ideas, engineering solutions, business plans and brand strategies. CNS has supported this activity by sharing examples of biomimetic design occurring at the nanoscale for the students to learn from and incorporate into their projects. In the coming year, Boradkar and colleagues from engineering will be submitting an NUE proposal to continue support of InnovationSpace's work on nano-related products.

Research Accomplishments and Plans, RTTA 3/3

Emerge took place on the ASU campus 1-3 Mar 12 and brought together artists, scientists, engineers, students, and educators in an attempt to "redesign the future" by thinking critically about the future of emerging technologies. In YR 9, headway has been made on a special issue for *Futures*, led by Selin and slated for publication in 2014. Articles include different analyses of *Emerge* and feature articles by CNS's Selin, Miller, and former post doc Davies, among others. In addition, the documentation of the *Emerge* workshops has been transformed to a custom designed online platform for open access annotation and curation (http://emergedata.vpl.design.cmu.edu) by Carnegie Melon's Aisling Kelliher (formerly at ASU's AME). Kelliher, who co-curated the Emerge exhibit at the ASU Art Museum with Selin in 2012, has also, since being exposed to the foundational ideas of RTTA 3/3, initiated a praxis-based course called "Design Fiction and Imagined Futures."

Research Accomplishments and Plans, RTTA 3/4

Research and practice around innovative forms of public engagement with technoscience have been a key component of RTTA 3. Futurescape City Tours (FCT) is a distributed, deliberative activity that expands on the successes of the NCTF by increasing the experiential richness and contextual relevance of the deliberative process. Specifically, CNS-ASU researchers are investigating how to move "beyond discourse" within deliberation so as to incorporate the material, visual, and affective. These ideas have been discussed at a theoretical level in two recent papers (Davies and Selin 2012; Davies et al 2012), CNS-ASU is working on operationalizing this thinking into public engagement deliberative practices.

Using multi-media, reflective writing, and a walking tour, the FCT investigates how citizens can explore their local surroundings, visualize how these might change as a result of nanotechnologies, and deliberate about technological choices, preferences, complexities, and outcomes. The FCT's methods prioritize citizen-driven agendas, the importance of place and materiality, the relevance of multiple timescapes through the creative use of multi-media tools. In addition to new tools, the FCT integrated stakeholders and S & T experts into the deliberation process.

In YR 9, the Futurescape City Tours brought engaged 108 citizens in six cities to discuss the implications of nanotechnology for the city thus a space for deliberation enabling small groups of participants to interrogate the directions such technologies are taking in their cities. The citizen groups were composed of engineers working with nanotechnology directly, stakeholders from the community, or those members of the public who have interest in the directions of science and technology for their city. The project leaders designed an experiential interaction and assorted conversation spaces that focused on nanotechnology and other emerging technologies and their connection to urban landscapes and sustainability, using techniques that began with citizen concerns and curiosities, rather than starting with a focus on technological promises and risks. One aim of the project, as with many CNS projects, is to amplify citizens' skills to engage with complex technological subjects and to develop and articulate their own views on the desirability and implications of sustainability and nanotechnology.

Overall, the Futurescape City Tours seek to: 1) understand how new methods of public engagement work and with what consequences; 2) engage citizens in critical reflection about the risks and benefits of nanotechnology for the city; and 3) better understand the notion of capacity building in the context of CNS's vision of anticipatory governance.

In Spring of 2013, CNS researchers recruited six social science researchers from different regions in North America to scale up the FCT from the 2012 Phoenix Pilot. As a research group, the faculty involved collectively has a depth of experience in public and civic engagement, sustainability science, expertise, science communication and participatory technology assessment and together formed a well-functioning research collaborative. In May 13, CNS sponsored a three-day training session to relay, discuss and refine the FCT methods and theoretical positioning, which drew on the detailed theoretical and methodological explanations of the FCT presented on a shared research website (http://cns.asu.edu/fct/tour-implementation/session-iii).

In Fall 13, six FCT tours were implemented in six different cities. Each city followed the same methodology, with only minor modifications to suit local conditions. Each research site collected specified data that are shared in a data repository designed for the FCT and designed by Gano. The FCT started with an orientation session that aimed to establish citizen-set agendas regarding curiosities and concerns about emerging technology and the urban environment. The citizen group played the Nano Around the World game co-developed by CNS researchers and NISE Net, and afterwards they were provided with background material that included many of the research and media products developed by CNS. From the interests articulated by the citizens, CNS researchers then designed a walking tour of the city where participants were invited to use cameras and reflective writing to document, observe, question, and point out the places in their city where they see the past persisting, the present embodied, and the future emerging. Along the way, they met with a variety of scientific experts and civic stakeholders to discuss their concerns and question the role of technology in the city. In the third session, the citizens deliberated using their photographs to relay their views. Many of the sites completed the engagement with a gallery exhibition of the citizens' images, inviting the citizens, as well as the experts and other stakeholders involved in the project, for further interaction.

An important feature of the tour is the varied interaction that the citizens have with community leaders, prominent stakeholders and scientific experts. Rather than follow a deficit model of public understanding of science, the FCT sought to connect citizens and others in dialogue through a number of formats. Across the sites, citizens visited labs, maker spaces, and heating and cooling facilities, among others, and had the opportunity to pose questions, initiate discussions and offer their critiques, hopes and fears to the engineers, policy makers, or scientific guides specially invited to interact with the citizens at each location. To take one example, in Springfield, citizens met with US Representative Richard Neal (D-MA), Daniel LaDuke, Energy Engineer for Conservation and Load Management at the Western Massachusetts Electric Company; Carolyn Hart Lucien of the Pioneer Valley Transit Authority, and Guy McLain, Director of the Lyman and Merrie Wood Museum of Springfield History. They also met with Ken Carter of the UMass Amherst polymer science and engineering department and Materials Research Science and Engineering Center (MRSEC) to learn about research in nanotechnology self assembly and roll to roll processing, and Nikhil Malvankar, a postdoctoral research associate at UMass Amherst in Derek Lovely's Microbiology Lab, to learn about new bioenergy research associated with the Geobacter bacteria.

To implement the tours, and cinch the process into the local community, the sites rallied local resources and connections. For instance, at the DC FCT site, additional funding was secured from the Department of Science, Technology and Society at Virginia Tech ($2,000) and the CSPO DC office provided logistical support and a site for the first and third sessions of the project. Personnel at the National Building Museum helped design the DC tour and gave participants free admission to the museum on the day of the tour. At the Portland site, the Oregon Museum of Science and Industry (OMSI) provided space, free of charge, for the first and third sessions and the Institute for Sustainable Solutions (PSU) provided funding for student support for the tour.

In January of 2014, as part of the CNS Winter School, the FCT partners met to discuss and develop ideas coming out of the FCT, coordinate analysis (as relevant), discover collaborative writing opportunities, identify publishing strategies and plan a communications and outreach strategy. We laid out joint papers and presentations, identified platforms for coordinating analysis, analyzed thematic overlaps between the citizens' concerns, and developed near term plans for outreach. For the remainder of 2014, CNS researchers and FCT research partners are analyzing the results of the 2013 national Tours to demonstrate how the method works to build capacities among participants to appreciate the trade-offs, path dependencies and choices surrounding nano and their city.

RTTA 4: Reflexivity and Integration

Personnel – faculty and senior participants

Erik Fisher RTTA 4 leader (ASU, assistant professor, Political Science and CSPO)
Elizabeth Corley RTTA 4 co-leader (ASU, associate professor, Public Affairs)
Ira Bennett (ASU, assistant research professor, CSPO)
Steven Flipse (TU Delft, assistant professor, Communications)
David H. Guston (ASU, professor, School of Politics and Global Studies, CSPO)
Tom Seager (ASU, associate professor, School of Sustainable Engineering and the Built Environment)

Other Personnel: graduate students (20), post-doc (1)

Goals: RTTA 4/1 documents the influence of CNS-ASU research and engagement activities on the knowledge, values, and choices of NSE researchers and others. RTTA 4/2 theorizes and informs the integrative agenda of anticipatory governance through field research, methodological refinement and collaborative inquiry with NSE researchers. RTTA 4/3 implements the integrative agenda of anticipatory governance through interactions and collaborations with NSE and co-curricular activities including the DC Summer Session. RTTA 4/4 studies the meaning and implementation of integration and reflexivity in the sphere of science policy.

Projects under the RTTA 4 rubric include: interviews with and surveys of Center participants including collaborating NSE researchers, including the supplement awarded in YR 8 to study the impacts and outcomes of CNS-ASU activities; 30 laboratory engagement studies coordinated by the associated STIR project; and various projects that characterize, map and assess the integration of societal dimensions into NSE research and policy.

Research Program, Accomplishments and Plans, RTTA 4/1: Center Assessments

In previous years, we documented and assessed the influence of Center activities on the NSE researchers with whom we collaborate by annually implementing an interview protocol focused on the knowledge, identity, and practices of these NSE researchers, particularly around their understanding of the societal aspects of their work. In Fa 12, we transitioned to a much broader survey that now includes not only NSE researcher but all Center participants. This transition involved hiring postdoc Michael Reinsborough to assist Guston, Corley and Fisher in performing an impact assessment that surveys all Center (N=798) participants and includes follow-up interviews.

Measuring Impacts and Outcomes of a Large-scale Social Science Research Center
Traditional metrics for university research (e.g., publication counts, citation analysis) tend to demonstrate the extent of research impact only with respect to the immediate research community. While CNS-ASU performs well under such metrics, these means fail to account for other more diverse Center impacts that may play out across the broader community of publics who engaged with the Center. These impacts can take the form of learning and behavior (Guston, 1999) and can be theorized to take place within the Center's Knowledge Value Collective (KVC; Bozeman, 2007)

Under supplementary NSF grant #0937591, RTTA 4 researchers set out to measure impacts and outcomes of the entire Center and at the same time explore possible experimental metrics suitable for assessing impact on the numerous and diverse communities which CNS-ASU interacts. The research was divided into two phases of data collection and then analysis and documentation:

- Initially an experimental survey was developed to explore quantitative measures of self-reported impact and outcome data from Center participants (N=798).
- From respondents a group of volunteers were generated for follow-up interviews (N=80).
- Survey data and the interview results are in the process of being analyzed and two papers are being prepared for submission to journals. Preliminary findings from the survey are summarized below.

Data Collection. In Apr 13, a survey on impacts and outcomes of CNS-ASU was distributed using Qualtrics software. Respondents had a period of 4½ weeks to reply, after which most US-based non-respondents were sent a printed version of the survey. The survey was developed using Dillman's Tailored Design Method (Dillman, et al. 2008), emphasizing survey response as a social exchange within a community (rather than a cost/benefit economic exchange). The survey design prioritized a fuller range of expression for respondents over limiting respondent choice into easily analyzable but narrow categories. In part this choice was made because the broad range of CNS-ASU participants did not fit into one or two simple categories. Participants included graduate and undergraduate students, post-doctoral scholars, adjunct and tenure-track and tenured faculty from numerous academic disciplines that spanned the humanities, arts and social sciences and the various science and engineering disciplines. A variety of participants external to university research and teaching communities also included informal science educators, business and industry representatives, civil society and policy agents, and members of the media or the general public. Questions were asked about concept familiarity; skills and method use; CNS impacts and outcomes knowledge; societal, technical, public engagement, and reflexive learning about nanotechnology. Self-reported role was compared to administrative knowledge of participant role. The results were formatted to be analyzable using SPSS 21, statistical analysis software. From May-Dec 13, 80 follow-up interviews were conducted to explore in detail the nature and quality of Center impacts and outcomes. Volunteers for interview were generated from survey respondents. Interviews were transcribed in preparation for analysis using NVIVO software for textual coding and qualitative analysis.

Data Analysis. While findings from the interview analysis are not yet available, preliminary findings from the survey are summarized as follows:

- <u>Preliminary Finding 1</u>: The Survey had a high response rate (51.31%) and was reasonably well distributed among the various groups/subpopulations within the overall CNS-ASU participant population. A high response rate indicates a high interest in the work of CNS by participants.
- <u>Preliminary Finding 2</u>: CNS-ASU influence on the use of concepts by respondents (collective mean "partly" to "very much") was greater than influence on the use of skills and methods (collective mean "little" to "partly"). This shows that (although some participants such as graduate students and post-doctoral scholars were formally trained in skills/methods) a large part of the Center's activity related to concept work circulated outside the immediate trainee community. The concept with the highest

influence rating was "anticipatory Governance," which is a signature concept of the Center.

- Preliminary Finding 3: Successively more persons are aware of the differing types of research impact, when impact type is arranged from formal to informal, from specific to general. A diverse typology of impacts/outcomes was used to more accurately capture some of the types of influences social science research centers can realistically have. Survey participants were asked to consider impact in a continuum from influencing an institution's "authoritative decision" or changing its customary behavior to changes in vocabulary, agendas, or general thinking. In most cases the influences upon and reasons for an authoritative decision of an institution are available only to a few persons. Nonetheless, about 5% of the respondents were aware of the Center's influence upon an authoritative decision of an institution, even though it is not the formal purpose of an NSF funded research center to seek impacts on institutional decisions. The steady increase in number of participants aware of each new type in the successively arranged typology of outcomes/impacts provides empirical support for this understanding of impact/outcome types.
- Preliminary finding 4: The primary goal of the Center is to engage participants in learning about the societal aspects of nanotechnology. For 392 respondents, the average self-reported learning rating was between "some" and "a lot." There were differences in learning by constituency. The "Museums and Science Educators" constituency reported the highest amount of learning. Because there are relatively few public venues for mass science and society communication, the Center chose early to allocate resources and strategic emphasis on working with informal science communicators. A secondary effect of the Center is often to educate participants on the scientific and technical aspects of nanotechnology. Constituencies that reported this type of learning even included the "Science and Engineering" constituency (although as might be expected, NSE professionals showed slightly less learning than other constituencies in this learning category). Reflexive learning is key to understanding how publics/others engage with scientific knowledge and thus how science policy can better support participatory and deliberative democracy for decision making in a society where science and technology have tremendous impacts. Nonetheless, it is a very difficult both to explain and to measure such learning in a formal questionnaire. The mean self-reported learning about self and others (reflexivity) from all survey respondents was just below "some."

The findings of the survey will be cross analyzed with the qualitative interview data to provide a more in-depth understanding of these results. Not only has this research project begun to assess the nature and quality of CNS-ASU impacts and outcomes, it has also used CNS-ASU as a laboratory to explore alternative metrics for large-scale social science research center assessment.

Research Program, Accomplishments and Plans, RTTA 4/2: Socio-Technical Integration Research (STIR)

CNS-ASU supports a unique set of laboratory studies and engagements. These studies are not traditional laboratory ethnographies with a focus on observation and explication, but rather are efforts to integrate social science and humanities with NSE research and to understand that integration. Early Center reports detail initial individual integrative research, and the **Education** section of this report discusses integrative curricular and educational activities. Since Sp 09, the separately funded NSF Socio-Technical Integration Research project (STIR; # 0849101; Fisher, PI; Guston, Co-PI) has constituted the Center's principle research activities focused on documenting and understanding NSE capacities to participate in responsible innovation through collaborative social scientific engagement. STIR has trained and coordinated the "laboratory engagement studies" (Fisher, 2007) of over two-dozen doctoral students, who implement a "decision protocol" (ibid.) that is designed to both facilitate collaborative "midstream modulation" (Fisher et al., 2006) and improve understanding of the conditions and capacities for "socio-technical integration" (as defined by Fisher & Miracle, in press; see RTTA 4/4).

As STIR director, Fisher has coordinated a set of thirty comparative, international, intervention-oriented lab studies in North America, Western Europe, and East Asia. To date the project has mentored and trained twenty-two (22) graduate students or "STIRers"—including twenty (20) doctoral students and two (2) masters students. They are divided into a "core" group of ten original project investigators and twelve "associated" investigators who since joined the participatory research program. Four (4) postdocs have also worked on project-related research. (See **Education** section for a list of the 22 participating STIR students and 4 post-docs by institution.) STIRers are trained to implement various tools and techniques developed by Fisher over the course of each 12-week study in the attempt to conduct socio-technical collaborations, study the social and cultural conditions that prohibit and enable them, and assess the policy and political relevance of their outcomes. STIR laboratory engagement studies have been completed in over half a dozen ASU laboratories and in 22 additional laboratories around the world, bringing the number of labs in the STIR network to 28. To date, 30 studies have been completed, not counting Fisher's 3 pilot studies or 6 studies by researchers outside the US cognizant of the STIR approach.

Major activities in YR 9 include an aggregated assessment of STIR laboratory engagement studies, individual laboratory engagement studies, a reflexive ethnography project, international workshops including the Communities of Integration meeting, and testimony before the President's Bioethics Commission.

STIR Aggregated Outcomes Assessment

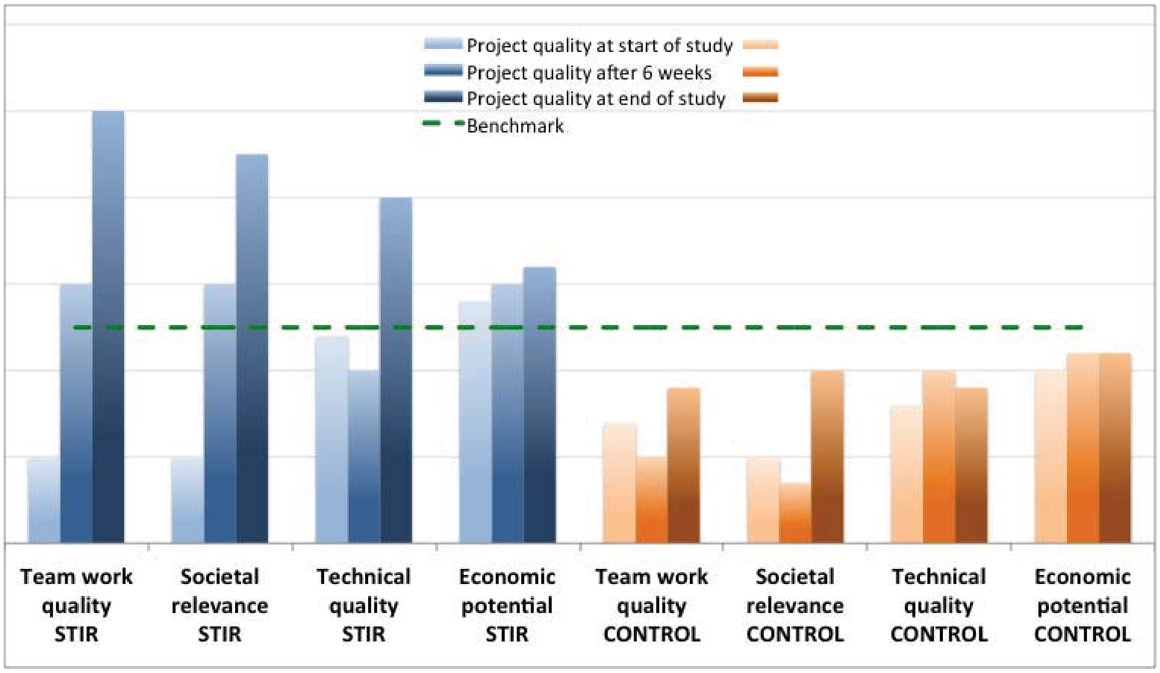
In YR 9, Fisher and TU Delft assistant professor (and STIR alum) Steven Flipse designed a survey to tabulate outcomes across the STIR studies and explore conditions for effective socio-technical integration. The survey explores relationships between use of the STIR decision protocol and midstream modulation outcomes (reflexivity, deliberation, and adjustments), relationships among these outcomes, and relationships between instrumental and normative values in the outcomes. The survey was emailed Jan 14 to 23 project participants, and follow-up requests for clarification and elaboration of survey responses were emailed to select respondents. To date, 19 responses have been received from 23 requests, yielding a preliminary response rate (82.6%). These 19 responses report on 28 laboratory engagement studies.

Preliminary analysis of the 28 studies suggests three categories of use of the STIR protocol, according to level of collaboration: frequent (N=12), infrequent (N=10) and little or none (N=7). Preliminary findings show that both frequent and infrequent collaborative use of the protocol consistently produces changes in reflexive awareness, value deliberations, and material adjustments. Frequent use of the protocol, however, produces reports of more numerous changes in reflexive awareness and of greater value diversity in deliberations and adjustments than does infrequent use (where value diversity refers to both instrumental and normative values were considered). By contrast, little or no collaborative use of the protocol produces some changes in reflexive awareness, few changes in value deliberations, and no changes in material adjustments.

These preliminary findings are consistent with published results of individual STIR studies (Calleja-Lopez and Fisher 2009; Conley, 2011; Fisher, 2007; Fisher, 2010; Fisher and Schuurbiers, 2013; Flipse, 2012, 2013; Fisher et al., 2010; Schuurbiers, 2011), which are strongly indicative of both the possibility and the utility of socio-technical integration through social science-natural science collaborations. They suggest that collaborative use of the STIR protocol in a frequent and intensive manner (over a 10-12 week period) is very likely to enhance the reflexive awareness, value deliberations, and material adjustments of participating scientists and engineers and thus to exercise capacities for responsible innovation. By comparison, when the protocol is used collaboratively in an infrequent but intensive manner (over a 6-12 week period), similar results, although less numerous and less diverse, are also very likely. Sustained interaction between the social and natural sciences by itself, however, does not appear to be sufficient to produce such effects, which are fewer or absent altogether in cases of sustained interaction but with little to no collaborative use of the protocol.

Individual STIR studies

In YR 9, in an article in *Technological Forecasting & Social Change*, Flipse et al. (2013) report on a comparative research study to assess the extent to which industrial R&D projects can be measurably improved through socio-technical integration. They employed the STIR approach to midstream modulation with a group of project leaders and measured changes in their projects' performance using Key Performance Indicator (KPI) scores. Their results show that the integration of social and ethical aspects was not only perceived by participants to be functional and useful, it also measurably improved KPI scores.



(Figure Courtesy of Steven Flipse)

Also in YR 9, Cecilie Glerup, whose visit to ASU we previously reported on, completed a laboratory engagement study in Copenhagen, Denmark, the second of her paired 6-week STIR studies. Similar to Fisher's pilot study, Glerup's use of the STIR protocol was not intended to change scientific practices *per se*. Rather, it was used as a specific qualitative method focused on how norms affect conduct in scientific work. Using the same way of interviewing at every encounter and asking for justifications for the very specific decisions made in relation to scientific work, proved to be an effective way of relating macro structures with everyday practices in the lab. Nevertheless, and also similar to Fisher's pilot study, certain "unintended side-effects" regarding reflexive and responsive capacities were observed. Two of the scientists called the interviews "my therapy session," a room to reflect and ponder on their ways to go about during their work. Some also reported that they had changed their attitudes and work strategies due to the semi-structured interactions. One of the Danish scientists, for instance, reported that he had always been very skeptic about the public's involvement in decisions about plant GMO, but he had been increasingly convinced that, "if we cannot convince the public about we are doing, then perhaps we are not doing the right thing' and he had now volunteered to do a couple of public engagement activities." Meanwhile, one of the US scientists reported that he has optimized a dermatological treatment process by using another method that reduced processing time from 15 hours to 15 minutes—an outcome that is likely to lower consumer cost for the product when it becomes commercially available.

While the STIR protocol thus at times heightened the reflexive and responsive capacities of the scientists, one can argue that it always did so in a specific organizational context, where the existing organizational culture set limits and possibilities on how to reflect. An important finding, which needs to be developed further, is that the reflexivity heightening observed among individual scientists took place within cultural patterns that were already in place within the lab. The organizational *morale*—what was collectively thought to be 'good' or 'bad'—had a high level of influence on the scientists' imaginations of their social responsibility.

Also in YR 9, Cameron Keys, a graduate of ASU's Science Policy Master's program, completed his 12-week study in Tsukubu, Japan at the Advanced Nano Characterisation Center (ANCC), Sengen site of National Institute for Materials Science (NIMS). Keys reports that the STIR protocol was deployed on the lab floor immediately following a failed experiment to organize and accelerate evaluation of possible sources of error. Not only did this process yield value for the research progress, institutional pressures and social obligations were explicitly discussed as part of an important technical practice. Key's study coincided with a professional documentary film in which participating scientists and the STIR researcher discussed the feasibility of modulating the material and social outcomes of laboratory knowledge production through forms of laboratory engagement. This led to Keys co-organizing a three-day public event in Amsterdam, Netherlands with the film director, which brought participating STIR scientists from Japan and other neuroscientists together to discuss technical, social, and ethical aspects of laboratory research with live audiences at the Flemish Cultural Center of Amsterdam. Keys and the participating laboratory director have co-developed a working paper discussing the politics of public neuroscience research, which publication is designed around themes co-developed during STIR interviews and subsequent discussions. Like other STIRers, Keys maintains a productive relationship with the laboratory scientists who hosted him.

Finally, YR 9 also saw Miles Brundage, a fellow of the Solar Utilization Network (SUN) IGERT (#1144616; Wim Vermass, PI; Guston, co-PI), commence STIR "rotations" across a series of laboratories and other organizations that span university research, industrial development, and public use and regulation of nanotech-based research, focusing on the intersection of robotics and AI.

STIR Reflexive Ethnography Project

While the main focus of STIR is on the capacities and conditions of technical experts to engage in socio-technical integration, it also offers an opportunity to focus on the experience of social science and humanities investigators. As reported last year, Fisher and ASU doctoral student Brenda Trinidad administered an online survey to project investigators as part of a mediated reflexive ethnography of STIR investigators' experiences in conducting laboratory engagement studies as embedded scholars working side by side with natural scientists and engineers in pursuit of collaborative inquiry. The survey was based on six broad themes (difference, construction, transformation, conditions, relationships and identity). Follow-up interviews were then conducted with select respondents for elaboration and clarification of survey responses. In Y9, the results were summarized and presented at the STIR project's 5th workshop, *Recollecting and Recording Stories*, held in Tempe in May 13.

The workshop was also designed to provide the 11 participants concentrated, in depth reflection in a group setting of the STIR experience, guided by the survey themes. With a focus on generating and documenting stories and vignettes, various new techniques were introduced to spark individual and shared memories. Time was provided for writing and sharing memories, the discussion of which became a cross pollination of ideas, in some cases triggering previously forgotten memories. An online shared document was utilized for the stories generated from these exercises. Additionally, time was given to review previously written papers to locate stories and vignettes within each, which were also added to the shared document. The STIR researchers were also able to simultaneously begin coding the vignettes against the survey themes, cross-checking interpretations and coding rationales along the way. Workshop participants also identified additional themes (e.g., failure/success, disappointments, expertise, resistance, isolation/community). ASU doctoral students Trinidad and Conley are consolidating and analyzing the data generated from the survey and workshop. A draft reflective ethnography paper will be presented at the Jun 14 YR 10 STIR project workshop to be held at Waterloo University.

Communities of Integration

The YR 9 STIR workshop was held in conjunction with workshops held by other "Communities of Integration," including Studies in Expertise and Experience (Harry Collins and Rob Evans), Trading Zones (Mike Gorman), The Toolbox Project (Michael O'Rourke), Conation (Tom Seager) and Field Philosophy (Britt Holbrook). Fisher and Seager brought these communities together in a "super workshop" in order to define an emerging scholarly field and sketch an overarching research agenda based on its stocktaking of socio-technical integration forms, means and ends. In assembling and helping host this collaborative, international network of research communities studying various aspects of socio-technical integration (theory, practice, and evaluation), STIR and CNS-ASU thus served as catalysts for articulating and comparing integrative capacities among new groups of social science and humanities researchers that previously had little to no interaction with the Center and that extend throughout multiple domains of emerging science and technology. Organized around key questions, the meeting allowed participants to exchange and compare their conceptual, methodological and normative assumptions and commitments. A working group chaired by Fisher with the assistance of ASU doctoral student Kennedy generated an executive summary comparing the Communities of Practice for Socio-Technical Integration (CoPSI). Following the meeting, Seager, Fisher and participating communities presented together in a panel at the Science of Team Science meeting at Northwestern University in Jun 13, and Kennedy presented findings synthesized from the meeting at an inaugural global conference on Research Integration and Implementation at Australia National University in Sep 14. A comparative methodological paper on socio-technical integration will be presented at the 2nd annual Communities of Integration meeting at the University of Waterloo.

Presidents Bioethics Commission Testimony

In addition to papers on socio-technical integration by Flipse et al. (mentioned above) and Fisher and Miracle (mentioned below), and various book chapters (e.g., Fisher and Schuurbiers, 2013; Gorman et al., 2013), we note that work informed by the STIR project has been presented in several public forums focused on responsible innovation, including a AAAS session organized by Guston and Fisher's keynote at a symposium on Responsible (Research and) Innovation in Osaka, Japan. Dissemination of STIR ideas and results has also continued to occur within formal policy advice settings. In Feb 13, Fisher addressed the President's Commission for the Study of Bioethical Issues in Washington DC. At the commission, Fisher participated in a panel titled "Implementation Strategies for Ethics Integration & Roundtable Discussion." Drawing substantially on STIR outcomes and research into the conditions under which science and engineering research practices are responsive to socio-ethical concerns, Fisher discussed how the inclusion of an ethicist on a research team might affect scientific research and whether this model has generated productive collaboration among scholars.

STIR is co-funded for 5 years at $540,000 through several NSF programs: Science, Technology and Society; Biology and Society; Mathematical and Physical Sciences and Society; Science of Science and Innovation Policy; and Office of International Science and Engineering. Additionally, through an international network that PI Fisher has cultivated since joining CNS-ASU in Aug 06, STIR project collaborators have expended over $500,000 to support and continue the non-NSF funded aspects of the project, bringing the total project funding to over $1M (not including administrative and financial support from CNS-ASU).

Research Program, Accomplishments and Plans, RTTA 4/3: Integrative Co-curricular Activities

(See **Education** section for an account of the DC Summer Session and the Certificate in Responsible Innovation.)

Research Program, Accomplishments and Plans, RTTA 4/4: Integration Policy and Responsible Innovation Studies

RTTA 4/4 conducts a number of policy studies that characterize, map and assess "socio-technical integration" into nanotechnology R&D prioritization, allocation and delivery processes in the US and around the world.

Integration Policy Studies

Last year, we reported on a study of 2500 research solicitations that found evidence that the increasing policy emphasis on socio-technical integration in European R&D system is confirmed at the level of resource allocation. In YR 9, Fisher and Miracle go one step above resource allocation and evaluate research prioritization in the US and UK nanotechnology programs in the wake of novel policy initiatives for responsible innovation. The paper, in press at *Science and Public Policy*, finds that decision makers engaged in limited reflection upon societal considerations during priority setting and allocation, in large part due to preclusive institutional practices and to fears that such reflection may slow down research and development. The paper also provides the following general and succinct definition of socio-technical integration: "any process by which technical experts account for the societal dimensions of their work *as an integral part of this work.*" Importantly, this definition applies not only to laboratory-level deliberation and engagement—but to all levels and forms of reflexive expertise.

Also in YR 9, Fisher and Rip (2013) provide an extensive account of international efforts aimed at responsible innovation in terms of a multi-level framework that takes into account multi-level dynamics such as alignments among authoritative decisions, strategic choices, and micro-level scientific research practices.

Responsible Innovation

As reported above and previously, Fisher and Guston have been closely involved with activities and scholarly efforts organized around the nascent concept of Responsible Innovation in the US, UK, Europe and Japan (cf. Owen et al., 2012). In YR 9, the Virtual Institute for Responsible Innovation (VIRI; # 1257246; Guston, PI; Fisher, Co-PI) was created to accelerate the formation of a community of scholars and practitioners across geographical and political divides to develop a common concept of responsible innovation for research, training and outreach. The institute's research agenda includes a focus on Responsible Innovation as a Social and Intellectual Movement. In Feb 14, VIRI director Guston organized a session at the 2013 Annual AAAS meeting on "Responsible Innovation in a Global Context" that brought several founding academic partners together.

Additionally, YR 9 saw the creation of the *Journal of Responsible Innovation* (Guston, editor in chief; Fisher and four European colleagues, associate editors) and the release of its first issue. *JRI* provides a forum for discussions of the normative assessment and governance of knowledge-based innovation.

RTTA 4 Continuing Integrative Outcomes

In addition to conducting ongoing integrative studies and engagements, RTTA 4 involves various socio-technical collaborations. Last year, we reported on Fisher and Woodbury's collaboration on developing provocative scenarios of nanodiagnostics for theranostics medicine based on work done in the Woodbury lab (Fisher et al., 2012). As mentioned above, in YR 9, Fisher and Seager co-organized the first annual Communities of Integration meeting and participated in a Science of Team Science panel on the same theme. Also in YR 9, Keys and the laboratory director who hosted him developed a co-authored article on politics of public neuroscience research.

Contribution to "ensemble-ization" or other center-wide activities
RTTA 4 continues to work with RTTA 2 and 3 in several projects. As mentioned above, in YR 9, Keys continued his participation on location in Japan and the Netherlands in the filming of Theys' documentary *Lab-life* and co-organized a public engagement event on neuroscience and ethics. Fisher and Guston are working with Brundage to incorporate STIR and midstream modulation activities into field sites that are intended to link together university, private, and government actors who are anticipated to be involved in the emergence of artificial intelligence / robotics trajectories. Fisher and Wiek explored and continue to develop ideas for combining STIR with the sustainability agenda, combining elements of RTTA 4 and 3. Three attendees at the YR 9 CNS Winter School have continued working with Fisher on new projects. Finally, Guston, Corley and Fisher continued working with Reinsborough on the Center impact assessment that combines efforts of RTTA 2 and 4.

TRC 1: Equity and Responsibility

Personnel – faculty and senior participants

Susan Cozzens, TRC 1 co-leader (GA Tech, professor, Public Policy, TPAC)
Jameson Wetmore, TRC 1 co-leader (ASU, Associate Professor, School of Evolution and Social Change, CSPO)

Matthew Harsh, Assistant Professor Concordia University
Ogundiran Soumonni,
Rodrigo Cortes, (Technology Management)

Other Personnel: graduate students (2)
Rafael Castillo
Thomas Woodson (funded through an NSF graduate research fellowship)

Goals: Over the past several years the TRC 1 team has been focused on determining whether and how nanotechnology can be used to help the disadvantaged. Much of this work has been centered on South African and US initiatives to develop "pro-poor" nanotechnology.

Research Accomplishments and Plans, TRC 1

Community Engagement Workshops

During this research, the TRC 1 team found several examples of attempts to create pro-poor technologies that struggled greatly or failed completely because the scholars involved did not understand the context of the depressed regions they were trying to improve. In a modest effort to help remedy that problem, for the last year TRC 1 has been creating a series of short workshops that introduce scientists and engineers who want to engage with the developing world to basic steps they should take early on to increase the possibilities for success. Currently preparations are being made to hold at least four iterations of the workshop. A few of its components were piloted at the CNS Winter School in January 2014. A full run was held in Atlanta with Georgia Tech engineering students in March. In April we will be running a week-long module in the South African Master's Program in Nanotechnology, to be held at the University of the Western Cape. We're also planning a two day version of the workshop for engineering students at Concordia University (Montreal) where TRC 1 team member and former postdoc Matthew Harsh is now an assistant professor. A fifth workshop may be held at ASU in fall 2014. The ultimate goal will be to find out what works and what doesn't and package the workshop so that it can be administered beyond the initial programs.

Graduate Student Dissertation Projects

Most recently, Cozzens has been working with graduate student Rafael Castillo on an analysis of the impact of nanotechnology on employment, using U.S. publication and patent data and an input-output model of the U.S. economy.

Graduate student Thomas Woodson is in the late stages of his PhD at Georgia Tech on the role of public-private partnerships in nanomedicine. At the Atlanta Conference on Science, Technology and Innovation Policy he presented preliminary data and he won honorable mention on his poster. and has accepted an assistant professorship at Department of Technology and Society at SUNY Stony Brook.

TRC 1 graduate students have been very successful in landing faculty positions upon completion of their work with CNS-ASU and we look forward to continuing to collaborate with them. Graduate students Rodrigo Cortes and Ogundiran Soumonni both finished their dissertations over the past year. Cortes is co-directing a Masters Program in Technology Management from his position at the Universidad de Chile and Soumonni is at the University of Witwatersrand in Johannesburg, South Africa.

Nano Around the World Card Game Update

The Nano around the World card game continues to be used across the country and beyond. For instance, Mathew Harsh uses TRC1 material, including the nano card game, in his upper level undergraduate classes for engineers at Concordia (Impact of Technology on Society, ~110 students per semester). As a result of this teaching, he was nominated by his students for the Global Engineering Teaching Award which is sponsored by Engineers without Borders. The “You Decide” spin off of the game was sent to over 200 science centers as part of the 2014 Nanodays kit.

Technology in Developing Countries Spinoff Project

The TRC1 work on technology in developing countries, especially South Africa, has also helped to form the foundation for a 2 year NSF grant that was awarded in September 2013 to Wetmore (PI), Harsh (Co-PI), and CSPO professor of practice Gregg Zachary (Co-PI). This new grant, “Capacity Building in Computer Science as a Driver of Innovation,” seeks to understand how African computer scientists in Kenya and Uganda are developing uniquely African solutions to African problems. As opposed to some most scientific fields, computer science is a relatively cheap and accessible way for nations without a lot of money or scientific expertise to develop their own indigenous science and engineering programs. The team will be looking for ways that developing internal expertise might be more effective at solving problems than technology transfer from western countries.

Women in Science Spinoff Project

Matthew Harsh is also supervising a graduate student (Gita Ghiasi Hafezi) at Concordia University (Mechanical and Industrial Engineering) who is utilizing TRC 1 frameworks for her dissertation 'Women in science and technology: the case of pro-poor applications of nanotechnologies.' Hafezi travelled to Georgia Tech in September to work with Cozzens and her graduate students.

TRC 2: Urban Design, Materials, and the Built Environment ("Nano and the City")

Personnel – faculty and senior participants

Arnim Wiek, TRC 2 leader (ASU, assistant professor, School of Sustainability)
Sander van der Leeuw, TRC 2 co-leader (ASU, professor and Dean, School of Sustainability)
Darren Petrucci (ASU, professor of design)

Other Personnel: (1) Post-doctoral scholar, (1) graduate student, (2) undergraduate students

Goals: The TRC2 group at the Center for Nanotechnology in Society (CNS-ASU) is addressing the question: How can nanotechnology be innovated and governed in responsible ways and with sustainable outcomes? Our studies employ system analysis, scenario construction, assessment, and intervention research methods to further develop and apply theories of anticipatory governance, sustainability, and responsible innovation. We focus on metropolitan Phoenix, a top-thirty nanodistrict and a top-twenty innovation hub in the U.S.

Research Accomplishments and Plans, TRC 2

How is nanotechnology currently innovated and governed in the urban environment?

The city is a powerful organizing mechanism for nanotechnology innovation and governance. Case study research in metropolitan Phoenix finds the dominant actor groups are academic, industrial, and government funding agencies (triple helix), with loose ties to other actor groups, including media and diverse publics. This actor network is divided along product-sectors with few cross-sector linkages. The dominant objective of innovation is to deploy profitable commercial or military products. There is novelty in the products' functionality, ranging from solar technology to personalized medicine; but there is little evidence that nanotechnology in Phoenix offers novelty in its innovation and governance processes. Actors, activities, as well as constraining and enabling factors, follow market-oriented or closed-collaboration (military) models of innovation and governance with little attention paid to adverse effects or broader public values.

How well does the current governance and innovation regime perform against principles of risk, sustainable, and anticipatory governance (responsible innovation)?

The innovation and governance process is predominantly profit-driven, with little to no regard to anticipating societal and environmental risks, or the disruptive power of technology. Lack of cross-sector linkages limits opportunities for collaboration, coordination, and joint learning. The actor network in Phoenix pays little attention to risk mitigating organizations (e.g., insurers, government regulators, NGOs). The nano-enhanced city may offer benefits to a privileged few. City officials, civil engineers, NGOs, and citizens, who participate in urban development, are unlikely to have the opportunity to deliberate on the effects of nanotechnologies before they become real. These characteristics stand in stark contrast to state-of-the-art governance theory in technology development.

What could be future implications if the current innovation and governance regime continues, in contrast to alternative models?

The results from a participatory scenario study suggest that the two dominant models of nanotechnology innovation and governance (market-oriented, and closed-collaboration military model) might amplify the lack of social cohesion, livelihood opportunities, as well as resource depletion and large-scale contamination. Society might get further divided along people's socio-economic status. Social tensions and outbursts of violence might be countered with even greater dominance, surveillance, and other control mechanisms (employing suitable nanotechnologies). In contrast, we explore governance models with high levels of public participation or open-source activities that could create a new 'triple helix' of innovation, linking public agencies, risk-mitigating actors, and civil society. Society might develop a unique practice of collectively addressing urban sustainability problems. This could lead to transformational solutions, including particular types of nanotechnologies that alleviate stresses on people, economy, and environment.

CNS-ASU Director Guston welcomes participants to the workshop on "Nano and the City: Future Scenarios of Nanotechnology Innovation". Participants discussed variables and future projections that informed TRC 2 scenario narratives depicting nanotechnology innovation in 2050.

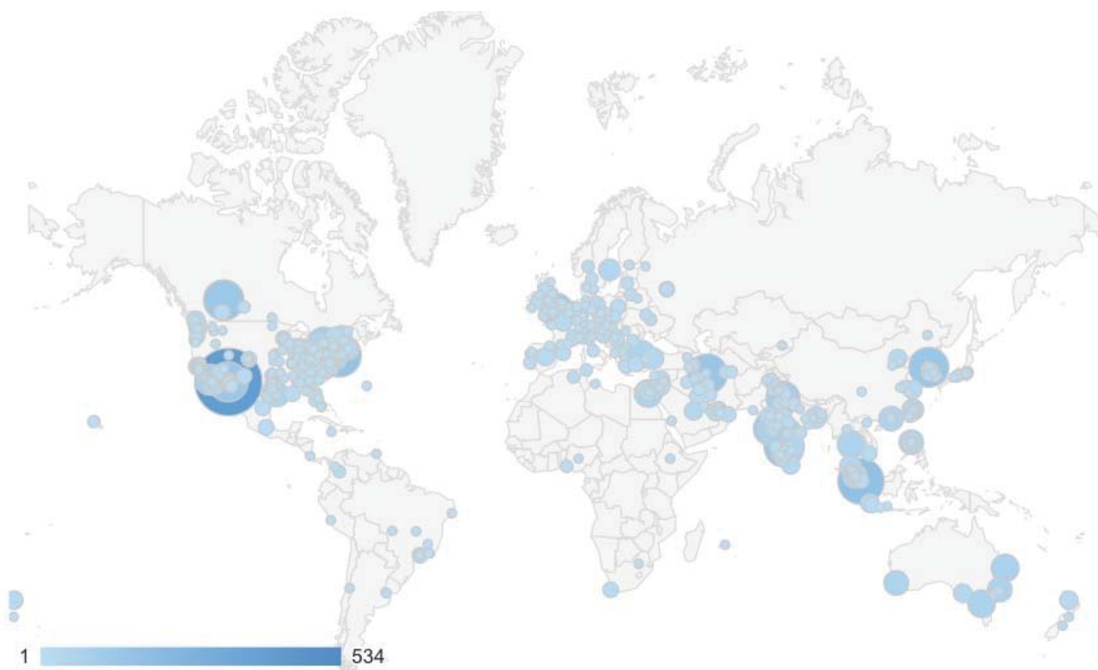
What are necessary changes to innovate and govern nanotechnology in responsible ways?

An initial intervention study demonstrates that it is critical to complement nanotechnology innovation with non-technical interventions. Nanotechnologies in the current governance regime have limited potential to positively affect urban sustainability challenges, such as water contamination, energy use, or childhood obesity. Embedded in more comprehensive transition strategies, however, they could play a critical role in making progress towards urban sustainability.

TRC 2 co-leader Wiek welcomes the participants and introduces the walking audits in front of the Gateway Community College to a 'Collaborative On-site Technology Exploration' that brought together a diversity of stakeholders to explore necessary changes to innovate and govern nanotechnology in responsible ways.

Nanotechnology in City Environments (NICE) Database

Continuing work begun in previous years, two undergraduate students and one graduate student under the direction of Wiek created data entries for the Nanotechnology in City Environments (NICE) database. The NICE database catalogues academic research, public reports, advertising materials, technical specification, and theorized implementation of nanotechnology captured in an urban context. The NICE database is an interactive catalogue of nanotechnology applications with particular attention being paid to functionality, mechanisms, potential benefits, potential hazards, urban domain, development stage, and substitution properties. The database has been used as a resource for CNS-ASU in multiple projects, including the FutureScape City Tours as a reference for partners and participants, for TRC2 scenario study and for an assessment of the current state of nanotechnology. The website is also available to interested scholars, professionals, and the general public. The number of unique visitors to the website has increased more than ten fold in the past year, from 1,174 between March 15, 2012 to March 15, 2013. In the past year that number jumped to 12,998 visits between March 16, 2013 to March 14, 2014. Visitors are logging in from over 1,000 cities around the world, including the U.S., India, United Kingdom, Iran, Taiwan, Brazil, China, Germany and Canada. The database has been continuously updated and built-out during this time period. (Also see **Section 12 Outreach and Knowledge Transfer**).



The map shows cities where unique visitors have logged into the www.nice.asu.edu website to view information on nanotechnology provided by TRC2. Bubble size is proportional to the number of visitors, scale at bottom. Image provided by Google analytics.

Future City Scenarios

Co-leader Wiek guided a design studio that explored the scenarios constructed by TRC2 in partnership with director Guston and senior participant Petrucci and ASU's Design School. Graduate students developed urban design proposals and other imaginative concepts of the nano-enhanced city based on the scenarios and their components, including societal drivers, innovation models, nanotechnology applications, and urban sustainability challenges. The students reimagined the urban design impacts of various types of nanotechnology. Place-specific renderings were overlaid with audio to create a 'movie' that visually depicts the mutual interactions between nanotechnology and society. Based on this work, a set of publications, presentations, and future citizen engagements are ongoing. Most recently, Petrucci and post-doctoral scholar Rider Foley presented the scenario movie at the Consortium for Science, Policy and Outcomes in Washington, DC. The seminar drew over forty science policy advisors including staffers on the House Committee on Science, Space, and Technology; guests from federal agencies and departments including the National Sciences Foundation, Department of Energy, Department of Defense, National Aeronautics and Space Administration; science policy organizations such as the National Academies of Science, American Chemical Society; and local academic institutions. The seminar's guests were struck by the layers of complexity exhibited in the evocative visualizations, which broke the mold of communicating future scenarios through line graphs and data projections. The guests appreciated this approach to explore future scenarios and the discussion focused on the effects of grounding the scenarios in a locale with rich cultural and technological contexts.

Design students discuss first set of urban design proposals with CNS-ASU director Guston and instructors Darren Petrucci, Renata Hejduk, and Wiek in the Decision Theater.

Avenues for further investigation

Having explored how nanotechnology is currently innovated and governed in the urban environment, and how the current governance and innovation regimes do or do not align with principles of risk, sustainable, and anticipatory governance (responsible innovation), we continue to develop a research agenda around the question of how to better align the current state of nanotechnology innovation and governance with principles of responsible innovation and sustainability. We are using an intervention research framework to engage stakeholders in exploring alternative practices that are more conducive to responsible and sustainable innovation.

We have identified approximately 50 potential interventions, focusing on nanotechnology innovation and governance in metropolitan Phoenix, and some across the U.S. We are selecting a handful of interventions to pilot in participatory, real-world experiments. Our selection criteria include, among others: a link to at least one specific normative responsibility; an accessible partnership is available; the transformation potential is high. For example, in as part of a collaboration with Arizona State University's Consortium for Science, Policy and Outcomes (CSPO), where CNS-ASU is based, we are evaluating the effects of an immersive educational program, Science Outside the Lab (SOtL). The SOtL program takes PhD students and candidates from across the physical and natural sciences and engineering to Washington, DC to meet with science policy advisors, lobbyists, decision-makers, business persons, and nongovernmental organization representatives, introducing the participants to the pluralism of interests shaping science policy related to nanotechnology and other national interests. We hypothesize that, as an intervention, the SOtL program raises participants' awareness of the complexity of science policy, better equipping them, as potential future leaders of science policy and practice, to consider and account for the social implications of and forces affecting the development of emerging technologies.

Under the direction of Wiek post-doctoral scholar Foley is continuing to engage with organizations that comprise the innovation system in Phoenix. Workshops with the United State Green Building Council, Arizona Nanotechnology Cluster, and Arizona Technology Council are being planned to both communicate the research group's findings and to explore alternative approaches to responsibly and sustainably governing nanotechnology within an urban setting.

In addition to conducting these intervention research projects as part of the TRC2 team, we are crafting an innovation intervention research protocol for publication, along with a greater detail on several of the 50 projects, mentioned above, to facilitate the practice of this research by other responsible innovation research groups.

Contributions to "ensemble-ization" or other center-wide activities

Operating in a Center-wide fashion has been a goal of TRC 2 from its inception. Graduate student Arora (RTTA 1) and Foley, with support from co-leaders Youtie, Shapira and Wiek, completed a two-year study on nanotechnology in the construction sector, which was published in Technological Forecasting and Social Change in 2014. Further collaboration between Lobo (RTTA 1) and Foley revolve around nanotechnology patents issued in Arizona and qualitative narratives about innovation dynamics in Phoenix, which contributed in part to data for an article published by Foley and co-leader Wiek in Technology and Society. Foley, Bernstein, and Kim (RTTA 2) collaborated on a conference presentation at the May 2013 conference on the Governance of Emerging Technology. Bernstein, Foley and Bennett submitted that work for publication in the Journal of Nanoparticle Research. Wiek and Selin (RTTA 3) facilitated mutually supportive efforts to explore the future of Phoenix through the Futurescape City Tours and the Governance Scenarios of Phoenix in 2013. That effort was advanced through two published articles on the concept of plausibility in the International Journal of Foresight and Innovation Policy. In a joint effort to expand CNS's capacity in Socio-technical Integration Research (STIR) and understand the dynamics of nanotechnology innovation in urban sustainability, co-leaders Wiek and Fisher (RTTA 4) are working with assistant professor Thad Miller at Portland State University (who also participated in RTTA 3 Futurescape City Tours) to submit a grant proposal for "STIR in the City." To integrate and develop synergies between TRC 1 and TRC 2, graduate student Bernstein and co-leaders Wiek and Wetmore (TRC 1) are planning to collaborate on workshops that explore methods of training scientists and engineers on community-engaged innovation research. TRC 2 is successfully integrating research projects with CNS-Biodesign fellow Kalinowski, CNS-FSE fellow Wender, and engineering student Rushforth. These integrative efforts have resulted in five conference presentations, three peer-reviewed publications, and a chapter of Kalinowski's dissertation entitled, "Facilitating Mutual Problem Understanding: Participatory Technology Assessment of an Emerging Technology." Furthermore, graduate student Bernstein and co-leader Wiek are collaborating with the Education and Outreach team to evaluate the impacts of the "Science Outside the Lab" summer workshops in Washington, DC.

The Virtual Institute for Responsible Innovation (VIRI)

The Virtual Institute for Responsible Innovation (VIRI; cns.asu.edu) commenced as an associated project of CNS-ASU in Oct 2013 with a three-year, $500K award from NSF's "Science Across Virtual Institutes" (SAVI) program. The scope of collaboration under VIRI includes not only CNS-ASU's resources at ASU, Wisconsin, and Georgia Tech, but also centers of excellence at the University of Waterloo (Canada), University of Exeter (UK), Durham University (UK), University of Sussex (UK), Maastricht University (Netherlands), Karlsruhe Institute of Technology (Germany), Oslo and Akershus University College of Applied Sciences (Norway), State University of Campinas (Brazil), and the University of Copenhagen (Denmark). VIRI is considering the admission of additional members from the UK, Japan, France and elsewhere.

In its inaugural year, VIRI graduate research assistant Miles Brundage has investigated the ways in which responsible innovation (RI) fits the model of a scientific/intellectual movement proposed by Frickel & Gross (2005). He is in the process of interviewing two dozen scholars and policy-makers around the world about various aspects of their views and experiences related to responsible innovation. This work will help situate RI research and practice in a rigorous theoretical framework; identify commonalities and differences in how RI and related topics are seen around the world and in different institutional settings; and characterize some of the resistance to responsible innovation discourse/practice encountered by interviewees.

Brundage has also written and presented on connections between RI and the field of artificial intelligence. He presented a case for a more systematic approach to integrating social considerations into artificial intelligence research at the Philosophy and Theory of Artificial Intelligence conference at the University of Oxford. The paper is forthcoming in an edited volume with select papers from the conference. In addition to academic work, Brundage has also written for a public audience about issues related to artificial intelligence and its social implications for the Future Tense channel at Slate.com, a joint initiative of Slate, ASU, and the New America Foundation. He has also spoken about RI as a guest on a local radio station in Dallas and advised producers at several news outlets regarding the social implications of artificial intelligence.

In Dec 2013, VIRI co-PI Fisher and Brundage represented VIRI at an international symposium on responsible innovation in Osaka, the first such event in Japan. Fisher and Brundage exchanged ideas and experiences with researchers from Japan and around the world about science and technology governance. At the symposium, Fisher gave a presentation on "Socio-Technical Collaboration in Science: Building Capacities for Responsible Innovation," which highlighted his Socio-Technical Integration Research (STIR) project as well as VIRI and the *Journal of Responsible Innovation*, headquartered at ASU. While in Japan, Dr. Fisher also taught a class at the National Graduate Institute for Policy Studies in Tokyo and met with Japanese researchers in Tokyo and Kyoto. Meanwhile, Brundage met with researchers at artificial intelligence and robotics laboratories in Osaka and Kyoto to discuss RI.

In Feb 2014, VIRI PI Guston organized a 180-minute symposium, "Responsible Innovation in a Global Context," at the annual meeting of the American Association for the Advancement of Science. The symposium featured VIRI participants Fern Wickson (Norway), Maja Horst (Denmark), Marco Markosy (Brazil) and Heather Douglas (Canada), as well as Michael Davis (Illinois Institute of Technology), Go Yoshizawa (Japan) and Fisher and Guston.

Other VIRI highlights include:

- PI Guston and VIRI partners Markosy (UNICAMP) and Macnaghten (Durham) contributed to the graduate course on responsible research and innovation that Bennett teaches at ASU;
- VIRI co-hosted with CNS-ASU a lecture on "An Institutionalist Sociology of Responsible Innovation" at ASU by Sally Randles (Manchester);
- VIRI partner Heather Douglas (Waterloo) delivered the 2013 Steinkraus Lecture on Human Ideals at SUNY-Oswego on the topic of the role of science in a democratic society;
- VIRI co-PI Fisher addressed the Presidential Commission for the Study of Bioethical Issues on 11 February 2014, discussing his work on socio-technical integration research and responsible innovation; and
- VIRI graduate research assistant Brundage and fellow doctoral student in ASU's Human and Social Dimensions of Science and Technology program Denise Baker have been selected to attend a summer school in Germany organized by the Notre Dame-led, NSF-funded EAGER/SAVI "Computer Architecture for 2020 and Beyond."

TABLE 2: NSEC Program Support
(NSF Grant #093791)

Projects	(1) Current Year 9/15/13 - 9/14/14 Budget (NSF)	(2) Current Year 9/15/13 - 9/14/14 Budget (Cost-share)	(3) Current Year 9/15/13 - 9/14/14 Budget (Other Support)	(4) Summary 1-3 Current Year Total Budget (Combined)	(5) Next Year 9/15/14 - 9/14/15 Budget (NSF)
RTTA 1	$195,493	$0	$495,788	$691,281	$248,562
RTTA 2	$238,904	$0	$264,804	$503,708	$130,402
RTTA 3	$152,257	$13,885	$339,944	$506,086	$75,059
RTTA 4	$38,165	$38,602	$102,300	$179,067	$64,817
TRC 1	$30,035	$0	$236,336	$266,371	$21,100
TRC 2	$36,668	$28,448	$176,079	$241,195	$81,919
Seed Projects	$0	$0	$0	$0	$0
TOTAL Projects	$691,522	$80,935	$1,615,251	$2,387,708	$621,859
Education	$121,680	$15,579	$39,138	$176,397	$97,726
Administration	$152,308	$117,831	$154,500	$424,639	$178,770
Equipment	$0	$0	$0	$0	$0
Knowledge Transfer	$49,260	$0	$11,220	$60,480	$84,813
Indirect Costs	$286,630	$0	$955,557	$1,242,187	$318,232
Subtotals	$1,301,400	$214,345	$2,775,665	$4,291,410	$1,301,400
Total Budget	$1,301,400	$214,345	$2,775,665	$4,291,410	$1,301,400
Uncommitted	$0	$0	$0	$0	$0

* Please note: Seed Projects have been included in the individual research program to which they are relevant.

David H. Guston, Director, CNS-ASU
April 14, 2014

10. NSEC Diversity Progress and Plans

Progress Toward Enhancing Diversity

Since its founding, the Center has worked to enhance the diversity of its leadership, faculty, postdoctoral, graduate, and undergraduate researchers. The Center has put significant effort into recruiting women and individuals from underrepresented groups. These efforts have included working with the ASU Hispanic Research Center to conduct workshops and courses oriented toward graduate and undergraduate students from underrepresented groups, as well as efforts to ensure appropriate advancement of faculty and postdoctoral researchers through promotion and increasing involvement in Center leadership. While the Center's diversity has improved significantly since its inception, in the recent year there has been only a modest improvement in racial and ethnic diversity and a modest decrease in gender diversity overall (while gender diversity remains strong in leadership positions).

Center efforts have worked especially well in recruiting women into Center activities at all levels. NSECs are expected to be model programs and to meet or exceed national percentages for the inclusion of women and underrepresented groups in science and engineering. At all levels, the current percentage of women in the Center exceeds the relevant national equivalent percentage in science and engineering fields. The Center has also made progress with regard to Hispanic participation, especially in recent years. In terms of Center leadership, postdoctoral, and graduate student participation, the Center exceeds (and in some cases significantly exceeds) the national percentage for Hispanic teachers in colleges and universities. The percentage of graduate students from underrepresented groups also exceeds the percentage of doctoral degrees awarded nationally to students from under-represented groups. See Tables 4A and 4B for an overview of Center personnel. We report results for Table 3A and 4A, but percentages of US minorities tend to rise if Table 3B and 4B are used, as many reported Asian participants are not US citizens.

As directed by the NSEC diversity reporting requirements, we compare our data below with data from national science and engineering statistics, as provided by the National Science Foundation. For comparison, we have used data from NSF's *Women, Minorities, and Persons with Disabilities in Science and Engineering* (http://www.nsf.gov/statistics/women/) updated January 2013 (with most data from 2010). The data available from this report is not symmetrical with respect to women and minorities nor the social sciences and science and engineering more broadly. We have therefore used the statistics available. Thus, our comparison categories vary somewhat.

Leadership: Center leadership has transitioned from its first phase (YRs 1-5) to its renewal phase (YRs 6-10). The Center's leadership initially included two women of six principal investigators (Carlson, Schneider) and three women of eleven leaders of the six RTTA and TRC research programs (Corley, Hogle, Schneider), for a total of five of seventeen (29%). At the time of the YR 9 review, two women serve among the five renewal PIs (Corley, Youtie) and five women serve among twelve RTTA and TRC research program leaders (Corley, Cozzens, Rawlings, Selin, Youtie), for a total of five of fifteen Center leaders (33%). Of these individuals: Corley began as an assistant professor and faculty researcher and is now a tenured associate professor, research program leader, and co-PI; Cozzens began as a faculty researcher and is now a research leader; Selin began as a postdoctoral researcher and is now a tenure-track assistant professor, research program leader, and associate director for anticipation; Youtie began as a faculty researcher and is now a research program leader and co-PI. Rawlings joined the Center as a research professor and research program leader.

Research program leaders currently also include one Hispanic (Lobo), for a total of one of fifteen (7%) – an improvement over the lack of any members of underrepresented racial or ethnic groups among the original leadership team, but a drop from YR 8 with the departure of Lim from the Center's leadership team.

The percentage of women in Center leadership roles is equivalent the percentage of doctoral level women in US universities with very high research activity (33%, NSF Table 9-21). The Center's Hispanic leadership for the renewal period slightly exceeds the percentage of doctoral level Hispanics in US universities with high research activity (4%, NSF Table 9-21). For the social sciences specifically, these numbers across all US colleges and universities are 38% for women and 5% for Hispanics.

Faculty and Professional Participants: From YR 1 to YR 7, the Center increased the number (and percentage) of women faculty involved in Center research and activities (non-leadership) from an initial seven (7 of 31, 23%) to 194 (194 of 507, 38%) active faculty and professional collaborators. YR 8 and YR 9 participation rates were lower, as we did not co-sponsor three major conferences, as we had in YR 7. In YR 9, participation of faculty and professional participants was 207 total individuals, with 84 women (41%)

The Center has also increased the ethnic diversity of faculty and professionals involved in Center research (non-leadership). The Center faculty initially included 5 Asian Americans (of 31, 16%) and zero from underrepresented groups (of 31, 0%). The Center faculty and participants at the end of YR 7 included 2 Native Americans, 3 African Americans, 39 Asians, 9 Hispanic, and 1 disabled, for a total of 54 individuals (out of 507, 11%). In YR 8, participants included 1 Native American, 1 African American, 18 Asians, and 7 Hispanic, for a total of 27 (of 204, 13%), for an increase of 2%. In YR 9, participants included 1 Pacific Islander, 1 African American, 19 Asians, and 7 Hispanic totaling 21 (of 207, 14%) faculty and professionals.

Overall, the diversity of the Center faculty and professional participants stayed roughly the same in the past year. The percentage of women faculty in the Center slightly exceeds the percentage of women holding science, engineering, or health doctorates in US faculty positions in very high research activity universities (33%, see notes under Center leadership). The percentage of Hispanic faculty in the Center is slightly less than the percentage of Hispanic faculty according to the same metric (4%, see notes under Center leadership).

Postdoctoral Researchers: Since its inception, the Center has increased the diversity of women in postdoctoral research positions. Initially, the Center had one woman postdoctoral researcher (Selin) out of four (25%), who has subsequently been promoted to tenure-track assistant professor and has become a research program leader. By the reporting period of YR 9, the Center had 8 women (of 14, 57%). Center progress in enhancing the racial and ethnic diversity of its postdoctoral researchers has been somewhat but not fully satisfactory. The Center has increased the number of Asian and Asian American postdoctoral researchers involved in the Center, from one in its initial year (1 of 4, 25%) to 4 (of 14, 29%) in YR 9; the Center had 1 Hispanic postdocs (of 14, 7%). Unfortunately, the Center has not increased the number of African-American, Native American, or Pacific Islander postdoctoral researchers from its initial zero. The percentage of women postdoctoral researchers in the Center exceeds the percentage of women in postdoctoral positions in the social sciences (47%, NSF Table 8-1).

Graduate Students: The Center has seen significant progress since its inception in improving the gender, racial, and ethnic diversity of its graduate students. At its inception, among its active graduate researchers, the Center had eight women graduate students (8 of 28, 29%) and eight Asian or Asian American graduate students (8 of 28, 29%). As of the YR 9 report (**Table 4A**), the Center has 44 women (of 88, 50%), 17 Asian or Asian American (of 83, 19%), one African American (of 88, 1%), and nine Hispanic (of 88, 10%) active graduate students among its researchers. In addition, Center degree programs and certificate / training programs (**Table 3A**) have involved 40 women (of 83, 48%), 1 African American (of 83, 1%), 16 Asians (83, 19%), and 9 Hispanic (of 83, 11%) students. These levels indicate increased participation from women and Hispanics from previous years and decreased participation from African Americans and Asians.

The percentage of women graduate students involved in Center research is marginally lower than the percentage of women graduate students in the social sciences nation-wide (54%, NSF Table 3-5). The percentage of under-represented minorities (26/83, 31%, **Table 3A**; 27/88, **Table 4A**), collectively, is above the share of under-represented minorities among social science graduate students nationally (22%, NSF Table 3-1).

Undergraduates: The Center has made some progress in improving the diversity of its undergraduate researchers. At its inception, the Center had two women undergraduate students (2 of 8, 25%), three Asian or Asian American undergraduates (3 of 8, 38%), and no other students from under-represented groups. In reporting YR 9 in its research programs (**Table 4A**), the Center has 7 women undergraduate students (of 22, 32%), 3 Asian (of 22, 14%), 1 African American (of 22, 5%), 1 Pacific Islander (of 22, 5%) and 4 Hispanic undergraduate students (of 22, 18%). Total minority undergraduates involved in research equaled 8 (of 22, 36%), an improvement in all categories and overall. Undergraduates involved in the Center's educational programs (**Table 3A**) include 13 women (of 30, 43%) 1 African American (of 30, 3%), 4 Asians (of 30, 13%), and 3 Hispanics (of 30, 10%), for a total of 8 (of 30, 27%).

Plans Going Forward

While the Center has performed strongly on diversity during its first nine years, meeting and, in many cases, exceeding relevant national percentages, there are still opportunities in the remaining time of the Center to improve. We have therefore established a strategic plan for the renewal period on diversity that aims to further improve the Center‘s diversity profile.

Overall Objectives: The Center‘s overall objective with respect to diversity is to be a model for incorporating diversity among Center participants. To achieve this, we propose to pursue the following specific goals:

1. To maintain and continue to advance high levels of Center diversity in those areas documented above where Center diversity currently exceeds appropriate national levels;

2. To seek opportunities to recruit new Center participants, where appropriate, who will enhance the diversity of the Center in those areas where the Center is currently lower than appropriate national levels; and

3. To enhance graduate and undergraduate participation among students from underrepresented racial and ethnic groups.

Strategic Opportunities: Looking forward to the final year of the Center's NSF-supported activities, we propose to focus on a small number of concentrated activities that we think will make a concrete difference in the short term to enhancing the Center's diversity while laying important infrastructural foundations for improving long-term diversity in the field.

1. Identify other areas of engagement beyond the Hispanic Research Center. The Center has had a relationship with the Hispanic Research Center (HRC) at ASU, through which the Center has built a growing number of contacts with students from African American and Hispanic backgrounds. In YR 7, CNS taught a 7-week course on nanotechnology in society (described in the **Outreach** section) to 12 ASU graduate students in the sciences and engineering from underrepresented backgrounds. The course was very successful, with several of the students following up and participating in Science Outside the Laboratory, Chemistry 501, led by Bennett and Wetmore, and other Center activities. In the reporting year, the major HRC STEM funding mechanism (the MGE@MSA program) sunset, leaving CNS-ASU without a major source of under-represented students for our programs.

2. The plan for YR 9 was to focus recruiting, funding, and other resources for the Winter School on students from underrepresented groups. Apparently we were unable to get that message to the right places as the under-represented minority applications did not materialize. In YR10 we will specifically target PhD students and post-docs at HBCUs and HSIs offering 3 full Winter School packages (including fees and transportation).

3. Develop and implement targeted recruiting efforts for the new Graduate Certificate in Responsible Research and Innovation and an undergraduate minor in Science & Technology Policy. We will organize and host recruiting events with HRC, American Indian Studies, and the American Indian Policy Institute, among others. We will coordinate diversity recruiting for the minor with the School of Public Affairs.

4. In YR 9, we successfully recruited in collaboration with the School of Social Transformation for a visiting assistant professor in science, technology, and social transformation. This person is teaching relevant courses in this area focusing on race and social justice around emerging energy technologies, which are strengthening recruiting into Center educational programs. In the coming year, she will be serving in Guston's stead as the social scientist working with the SUN IGERT program.

5. In YR 9 we planned a small undergraduate research program for underrepresented minorities designed to provide students with research training and mentorship that will help prepare them for graduate school. Again, we had a hard time getting the message out. This year we intend to hold an essay competition for under represented minority ASU undergraduates in their sophomore or junior year. Scholarships will be awarded and recipients will be given priority consideration for CNS research internship positions.

6. We will set aside discretionary funds of $20k to support these activities.

Networking for Diversity: As part of its efforts, the Center has begun to develop networks of potential partners for enhancing Center diversity. In the upcoming year CNS will sponsor a series of workshops bring together representatives from the Community College and Tribal College system, Informal Science Education and industry groups that are interested in emerging technologies and education. Three workshops are planned: the first looking at lessons from nanotechnology education over the last decade, the second, looking at designing education for the next generation of scientists and engineers and third, the next generation of programming to engage and inform publics.

11. Education

CNS-ASU is involved in extensive formal and informal educational activities, from undergraduate curriculum to graduate student and post-doctoral training and mentoring, and from science and engineering practitioner training to collaborations with science museums. Many of these activities are tightly integrated with research and outreach activities, and most maintain as their central focus the building of broader societal capacity for anticipatory governance. Thanks to its many innovative programs, CNS-ASU is recognized as a national leader in two particular areas of education. First, building on activities like co-sponsoring the "Congress on Teaching the Social and Ethical Implications of Research" in Nov 2011, CNS-ASU is developing and promoting education programs that introduce science and engineering graduate students to the social implications of their work, as well as developing a community for the scholars that do this work. Second, through collaborations with the Nanoscale Informal Science Education Network (NISE Net), especially a new training program for museum, CNS-ASU is developing and promoting new ways to make the societal aspects of science and technology accessible to science museum audiences.

Disseminating the CNS Education Models

CNS is increasingly seen as a leader in educating scientists and engineers in the societal aspects of their work. In recent years, CNS scholars and educators have hosted visits and extended conversations about such interdisciplinary teaching and training with colleagues including Christine S. Jones (Colorado State University), Janet Kourany and Kathleen Eggleson (University of Notre Dame), Megan Palmer (SynBERC/Stanford), Mary Sunderland (Berkeley), and Erik Aarden (Aachen University/Harvard). Some of this work has been international, including a Sp 12, collaboration among TRC 2 co-leaders van der Leeuw and Wiek with six universities from Canada, Mexico, South Africa, Germany, Sweden, and Japan to disseminate the teaching and research of sustainability scientists across the globe and a Fa 10 UK ESRC funded trip by Edinburgh researchers Jane Calvert and Emma Frow to investigate the Center's variety of training programs (followed up by subsequent visits by Guston in Fa 10 and Wetmore and Harsh in Su 11. Wetmore and Bennett also spent time at Edinburgh in 2012 disseminating CNS education programming and holding a workshop about science and society content in museums. Wetmore and Bennett were also involved in panels (at AAAS and 4S) that culminated, in collaboration with an NSF EESE grant (Herkert, PI), the National Nanotechnology Infrastructure Network, and NISE Net, in a Congress on Teaching the Social and Ethical Implications of Research. The response by the participants – more than 100 of them – was overwhelmingly positive, and the Center continues to contemplate how to bring the community together again.

Post-doctoral training and junior research scholars

CNS-ASU has put significant effort into building a cohort of talented junior scholars who are developing not only research skills but collaborative and leadership skills as well, including post-doctoral scholars in the reporting year Michael Reinsborough (PhD Belfast). Rider Foley (PhD ASU), and Kathryn de Ridder-Vignone (PhD Cornell). Researchers Barben (Free University-Berlin, Political Science & Sociology), Bennett (ASU, Chemistry), Conz (ASU, Sociology), Davies (Durham, Science Communication), Fisher (Colorado, Environmental Studies), Harsh (Edinburgh, STS), Selin (Copenhagen Business School, Knowledge & Management), and Wetmore (Cornell, STS) were all initially hired at the post-doctoral level at ASU. Another postdoctoral researcher, Hannot Rodriguez-Zabaleta (Philosophy & Risk Assessment), joined ASU through an award from the Basque Government and has collaborated in Center research with Fisher. The Center has also provided training to post-doctoral fellows at the University of Georgia (Catherine Slade [Georgia State], under the direction of Bozeman on RTTA 1/2), Georgia Tech (Jue Wang [GA Tech], under the direction of Shapira on RTTA 1/1 and Sonia Gatchair [GA Tech], under the direction of Cozzens on TRC 1), and Wisconsin (Jason Delborne [Berkeley], under the direction of Kleinman on RTTA 3/4 and Ramya Rajagopalan [MIT], under the direction of Fujimura on former TRC 2).

Many of these scholars have made significant advances professionally and many have taken core leadership roles in CNS initiatives:

- de Ridder-Vignone has accepted a tenure-track offer at James Madison University in the Department of Integrated Science and Technology.
- Foley is interviewing at University of Virginia in the Department of Science, Technology and Society.
- Eight are now in tenured or track positions: Barben at Alpen-Adria-Universität Klangenfurt (Austria) in a tenured position; Wetmore, now tenured, at ASU in the School of Human Evolution and Social Change; Fisher in a track position at ASU in the School of Politics and Global Affairs; Delborne in a track position at North Carolina State University; Wang in a track position at Florida International University in Public Administration; Slade in a track position at the Hull College of Business at Augusta State University with an affiliation with the Medical College of Georgia; Selin in a track position shared between ASU's School of Sustainability and the Consortium for Science, Policy and Outcomes; and Harsh in a track position at the Center for Engineering and Society at Concordia University.
- Bennett has been promoted into a research faculty position at ASU in CSPO.
- Conz was promoted into a research faculty position at ASU in CSPO, and also as a lecturer in ASU's Bachelor of Interdisciplinary Studies program. He is now deceased.
- Gatchair is a lecturer at the University of the West Indies, Mona; Rajagopalan is a post-doctoral scholar at Wisconsin; Reinsborough is a post-doctoral research at King's College, London (UK); Sarah Davies is a post-doctoral researcher at the University of Copenhagen (Denmark).
- Four have taken on formal leadership roles in the Center: Wetmore is currently a co-leader of TRC 1 and associate director for outreach, Fisher is currently a co-leader of RTTA 4 and associate director for integration, and Selin is a co-leader of RTTA 3 and associate director for anticipation. Bennett is assistant director for education and leads the DC Science Outside the Lab Policy Workshop.
- Three have obtained additional external support for CNS-associated activities:
    - Fisher is PI on the $540K socio-technical integration research (STIR) award, which extends the Center's integration agenda that Fisher pioneered as a CNS-funded doctoral student at Colorado. Fisher was also PI on a National Nanotechnology Infrastructure Network (NNIN) award that seeks to "Document Integration" at several NSEC and NNIN sites.
    - Wetmore has been co-PI on three grants: a $300K NSF award from the Ethics Education in Science and Engineering (EESE) program that develops, teaches, and assesses several models of micro- and macro-ethics instructional activities for graduate students; a second $300K NSF award from the EESE program to develop CITI modules that address macroethics;

and a $700K NSF award to create and support a Professional Science Master's Program in Solar Energy Engineering and Commercialization that has a substantial ethics and policy curriculum, work that is now led by Bennett. Wetmore is also PI on a recent $280K NSF award (with Harsh and Zachary), derived in part from TRC 1 fieldwork in Africa, on the emergence of computer science in Africa. He was also the social science lead for the NG-NNIN proposal led out of Stanford.
  - Selin is co-PI on a recently awarded NUE with Seager and others ($200K) to investigate the societal aspects of nanotechnology through Lego serious play.

Many of the activities encompassed by these grants have roots in the Center's program. Others are active in initiating and collaborating on new research proposals as well.

- Fisher and Selin are both collaborators on an $820,000 award from the Research Council of Norway to Norwegian researcher Roger Strand that incorporates intellectual approaches in integration and foresight that they, respectively, have pioneered.
- Several have been involved in editing the Center's *Yearbook of Nanotechnology in Society*: Fisher, Selin and Wetmore (2008) edited the first volume. Wetmore edited the second volume (2011) with Cozzens, and Bennett edited the third volume with Hays, Robert and Miller (2012). Barben and de Ridder-Vignone are editing the fourth volume with Miller.

Graduate Education and Training

CNS-ASU organizes a variety of graduate education and training activities, aimed at several audiences. The first audience is the graduate students involved in the Center's core research activities. While only some of these students have been directly supported in graduate assistantships by CNS, many others have drawn on CNS research to develop their theses, received CNS travel funds, and been involved in the Center's events. In the reporting year, the Center has been training:

- At ASU, seven doctoral students:
  - Conley (Politics and Global Affairs), who defended her STIR-informed dissertation in Ap 14 and who has accepted a tenure-track offer from James Madison University;
  - Gano (HSD), who will be defending her dissertation Su 14, has been collaborating with Cobb at NCSU on a follow-on manuscript to the NCTF project, has been assisting ECAST on the World Wide Views on Biodiversity project and the NASA project, and who has an interview at Iowa State for a tenure-track position in science communication;
  - Trinidad (funded; HSD), who has been assisting both Fisher on RTTA 4 interviews and Wetmore and Bennett on the Informal Science Communication Program;
  - Luk (HSD), who has defended her dissertation in Sp 14;
  - Kim (funded; Public Affairs), who is completing his comprehensive exams and performing research for RTTA 2;
  - Sadowski (HSD), who has been working with Guston on the associated award, "Anticipatory Governance of Complex Engineered Nanomaterials;" and
  - Brundage (HSD), who is funded by the Virtual Institute for Responsible Innovation and serves as an editorial assistant for the *Journal for Responsible*

Innovation, and who is also affiliated with the Solar Utilization Network IGERT.

- Current updates on earlier ASU students include:
    - Foley completed is dissertation work in May 13 has continued on with CNS as a post-doc working on TRC 2 projects and helping run the Winter School. He has an interview for a tenure-track position at University of Virginia.
    - Pirtle, who completed his undergraduate degrees in mechanical engineering and philosophy in May 09, a master's degree in civil and environmental engineering in May 10, and served a Fulbright Fellowship in Mexico with Guillermo Foladori on the responsibilities of nanoscientists, is now working at NASA Headquarters after completing a Presidential Management Fellow at NASA.
    - Hays, who completed his doctoral degree in Politics and Global Affairs in Dec 09 on a topic in (original) TRC 1, served in Washington, DC with the New America Foundation as the lynchpin of its Future Tense collaboration with ASU and Slate.com. He is a post-doctoral fellow at the University of Bergen, Norway.
    - Valdivia (Public Affairs), who completed his doctoral degree in May 11 on a topic in TRC 1, "Equity Considerations in the Assessment of the Bayh-Dole Act," is now a technology policy fellow at the Brookings Institution.
    - Anderson (Public Affairs), completed his master's degree in May 10, has a chapter in the third volume of the *Yearbook,* co-authored a paper with <u>Fisher</u> related to RTTA 1 and RTTA 4 research, and completed his doctoral research at the University of Georgia working with <u>Bozeman</u>. Anderson is an assistant professor in the School of Public Affairs at ASU and an advisor to the president of the university.
    - Nulle (Global Technology and Development), who completed her master's degree in May 10, has a chapter in the third volume of the *Yearbook*.

At Wisconsin, 20 doctoral students (Binder, Dudo, Ho, Dalrymple, Shih, Hu, Hillback, Akin, Cacciatore, Choi, Doroshenko, Kim, Li, Liang, Liu, Runge, Simis, Su, Spartz, and Yeo) in Life Sciences Communication and Communication Arts have been working with RTTA 2 data. Several of these students have received Center Support through graduate research assistantships. Six of this group have so far secured faculty positions, including:

- Ho, who graduated in 2008 with a PhD in Journalism and Mass Communication and is now a tenure-track assistant professor at Nayang Technological University in Singapore;
- Binder, who graduated in 2010 with a PhD in Mass Communications and is now a tenure-track assistant professor at NC State University;
- Dudo, who graduated in 2011 and now holds a tenure-track position at the University of Texas at Austin;
- Dalrymple, who also finished in 2011 and is an assistant professor at the University of Iowa; and
- Cacciatore, who finished his dissertation in 2013, will be an assistant professor at the University of Georgia.
- Yeo (PhD, expected 2014) will begin tenure-track assistant professor position at the University of Utah during the Fall of 2014.

Other doctoral students trained at Wisconsin include: Leung, who completed his PhD in Sociology (2008) using CNS data and is now an assistant professor at SUNY Albany; and Jason Gallo, graduated with a PhD from Northwestern and is now employed at the Science and Technology Policy Institute, a privately-operated FFRDC, in Washington, DC. Noel Benedetti defended her M.S. degree using RTTA 2 data in 2010 and works as a technology consultant. Researchers and graduate students at Wisconsin also regularly participate in informal science outreach efforts, including Wednesday Nite at the Lab and the Wisconsin Literacy speaker series. Several students contributed entries to the *Encyclopedia of Nanoscience and Society*. Almost all peer-reviewed publications by RTTA 2 include graduate student authors, and many include graduate students as lead-authors. Faculty members and graduate students at Wisconsin have formed a research group – named "Science, Media and the Public" or "scimep" – that meets weekly to discuss research progress. This group includes members of not only RTTA 2, but members of the NSEC at Wisconsin. The meetings have helped foster collaborative work between the two NSF-funded grants (e.g., the recent publication by Runge and co-authors in the *Journal of Nanoparticle Research*).

In Su 10, RTTA 2 researchers also spearheaded the first online course in Science, Media & Society at UW-Madison, offered exclusively through iTunesU with select lectures being publicly available to all audiences. The Holtz Center for Science and Technology Studies at WU also just accepted a proposal from Scheufele to teach a course in "Science and Society," which is jointly offered for students in Life Sciences Communication and Science and technology Studies. Scheufele continues to teach the course to more than 100 students annually.

At Georgia Tech, three doctoral students (Arora, Li), two visiting doctoral students (Yi Zhang and Xiao Zhou of Beijing Institute of Technology of the Chinese Academy of Science), one master's student (Horsley), and two undergraduates (O'Brien, Skolky) worked with RTTA 1, with a focus on CNS-ASU themes, data and analyses, many toward their theses. RTTA 1 senior faculty and students meet on a regular basis (complete group meeting every Friday morning) for progress reviews, discussion of projects, publications, methods, and new ideas, mentoring, and (occasionally) hosting visiting speakers. All RTTA 1 doctoral students have participated in the initial meetings of the new Innovation Co-Laboratory (Georgia Tech, University of Manchester, and Beijing Institute of Technology), which has a focus on developing joint projects (in the nanotechnology and society domain) and doctoral training. Public Policy PhD student Yu Meng also worked with the RTTA 1 group.

Doctoral student Carley graduated in Sp13. Recent graduate Tang (Public Policy) is an assistant professorship position in public administration and policy at the Shanghai University of Finance and Economics, and Kay (Public Policy) has a post-doctoral fellowship with CNS-UCSB. Tang and Meng completed research on a Robert W. Gore award ($10,000) from the Chemical Heritage Foundation to undertake case studies of nanomaterials innovation in China. Based on RTTA 1 research, Arora, Carley, Kay, Tang, Meng, and Horsley authored or co-authored one or more journal submissions, journal papers or book chapters this year. Benn (a recent CNS-ASU PhD+ at ASU) was also a co-author with members of the Georgia Tech group.

TRC 1 at Georgia Tech supports four graduate students. Graduate students Rodrigo Cortes and Ogundiran Soumonni both finished their dissertations last year. Cortes is co-directing a Masters Program in Technology Management from his position at the Universidad de Chile and Soumonni is at the University of Witwatersrand in Johannesburg, South Africa.

Graduate student Thomas Woodson is finishing up his dissertation and has accepted an assistant professorship at Department of Technology and Society at SUNY Stony Brook.

The Center supported graduate students at other institutions in the organization, conduct and analysis of the National Citizens' Technology Forum, including: Amy Barr (Sociology, University of New Hampshire), now a Visiting Assistant Professor at St. Lawrence University, Christina Ndoh (Public Administration, North Carolina State University), John Willingham (Political Science, North Carolina State University), Mark Philbrick (Environmental Science, Policy, and Management, University of California, Berkeley), and Javiera Barandiaran (Environmental Science, Policy, and Management, University of California, Berkeley). Philbrick and Barandiaran (2009) have published on their activities and have contributed multiple entries to the *Encyclopedia of Nanoscience and Society*. Philbrick is currently an AAAS fellow with the Department of Energy.

The associated STIR project, through a variety of workshops, group meetings, regular correspondence and one-on-one sessions, as well as site visits by PI Fisher, has trained and mentored the following twenty two (22) doctoral students (12 of whom have received their degrees so far) and two master's students (who have received their degrees): Carlo Altamirano, ASU; Miles Brundage, ASU; Antonio Calleja-Lopez, University of Seville; Shannon Conley, ASU; Paul Ellwood, University of Leeds; Steven Filpse, Delft Technical University; Cecilie Glerup, Copenhagen Business School; Birgitte Hansen, Copenhagen Business School; Cameron Keys, ASU; Byoungyoon Kim, Rensselaer Polytechnic Institute; Miao Liao, Tsinghua University; Federica Lucivero, University of Twente; Christine Luk, ASU; Bastien Miorin, Grenoble; Robin Phelps, University of Colorado; Daan Schuurbeirs, Delft Technical University; Anthony Stavrianakis, UC Berkeley; Frank Theys, Katholieke Universiteit Leuven; François Thoreau, University of Liège; Brenda Trinidad, ASU; Michiel Van Oudheusden, University of Antwerp; Qin Zhu, Dalian University of Technology. In addition, STIR has also involved the participation of four post-docs (one of whom has since joined the private sector): Dorothy Dankel, Ana Delgado, Hannot Rodriguez, and (former participating PhD student) Daan Schuurbiers. In connection with their STIR-related work, Fisher also served/serves on graduate committees of Altamirano, Brundage, Calleja-Lopez, Conley, Keys, Phelps, Theys, Van Oudheusden and has provided formal feedback to the graduate advisors of Glerup, Kim, Liao, Lucivero, and Miorin.

At ASU, the second graduate student audience has been NSE researchers themselves. For these students, CNS-ASU created the CNS-Biodesign Fellows program, in which CNS pays one-third of their support. These students then participate in CNS-related curricular and co-curricular activities and perform what we call the PhD+, adding societal implications material to their doctoral research. The Center has graduated four PhD+ students: Troy Benn (Environmental Engineering; Westerhoff lab); Jason Lappe (Chemistry and Biochemistry; Woodbury lab); Quinn Spadola (Physics; Lindsay lab) and Tomasz Kalinowski (Biodesign; Halden lab). Spadola is now a AAAS fellow.

In its renewal period, CNS-ASU expanded the Fellows program to attract students from ASU's Ira A. Fulton Schools of Engineering. The Center's CNS-FSE Fellow, Ben Wender (Civil and Environmental Engineering, Seager Lab) started in Fall 11. In addition to integrating anticipatory approaches into his life cycle assessment, Wender has also been an active collaborator between CNS-ASU and the new QESST ERC, leading multiple publications on "anticipatory Life Cycle Assessment." Wender along with Foley developed and delivered a session at the 2013 Winter School on interdisciplinary collaboration.

The success of the PhD+ has generated a great deal of interest beyond CNS-ASU. CNS researchers Guston, Miller, Bennett, and Wetmore, have been invited to participate on a number of technical grant proposals over the past year and support for future PhD+ students was written into several of these proposals. In addition, the CNS researchers at Georgia Tech have begun to implement their own program. CNS-ASU has turned the existing PhD+ program into a certificate open to graduate students in engineering and the natural sciences in "Responsible Research and Innovation in Science, Engineering and Society." The Certificate, begun in Fall 13, graduates its first student, Caitlin Troyer, with a master of science in biology and society. Troyer is admitted to Harvard Law School for Fall 2014.

A number of the education activities originally developed by CNS to help graduate student scientist and engineers understand the social and ethical implications of their work were rolled into the Ethics in Engineering and Science Education (EESE) grant, on which Wetmore has been a co-PI. In one activity, Bennett participated in the Biological Design Graduate Program's core course, "Fundamentals of Biological Design II." Bennett attended every class and uses the presenter's remarks as entry points into discussions of social, ethical or political aspects of research with the class and presenter. The response by the presenters has ranged from hesitant to fully embracing the conversation. From these interactions, several potential collaborations with presenting faculty have developed. The interactions with the students in the course resulted in recruiting Kalinowski as a CNS-Biodesign Fellow.

A second CNS/EESE collaboration involves laboratory engagement. During Fall 09 and Spring 10, Wetmore and McGregor worked with Steven Helms-Tillery's neuroscience lab. They worked with the lab participants to reflect on the social and ethical implications of their research including the potential military uses and issues surrounding primate research. During Fall 10 Wetmore and McGregor worked with Patrick Phelan's solar engineering lab where they discussed how different social and political changes would promote and inhibit the spread of solar power. In Fall 09 Wetmore was asked to consult on the development of a similar program at the University of Rothenburg in Germany. In Summer 10 he presented the model at the Annual Symposium of the International Research Training Group, ran the first laboratory session, and served as consultant to the program through its successful completion. This success of this activity has led to continued working relationships with PIs and students and it has been written into a handful of grants.

A third CNS/EESE collaboration is the series of one-credit courses entitled "Science Policy for Scientists and Engineers" that has been taught by Bennett, Posner or Wetmore nearly every semester for the past six years. It is a 1-credit seminar for NSE graduate students to explore questions and issues of science and technology policy in society that are relevant to their own research. Again this year the course was filled to capacity. The interactions with the students in the course yielded the first CNS-FSE Fellow, Moran, and it has drawn a number of other students into the Informal Science Communication Project. Because Posner left ASU and because of ever-increasing demands on their time, Bennett and Wetmore developed a new model for this year's course. In 11 and 12, a biochemistry graduate student, Kiera Reifschneider was so interested in ensuring that the course was taught that she served as a co-instructor, helping to determine the year's theme and facilitating much of the logistics required to keep the class running. Reifschneider successfully defended her dissertation in Oct 13 and has taken a Post-doc position with in CSPO funded by the NNIN.

The evaluation data generated under the EESE is impressive. Four models were evaluated – the embedded course (Bennett in Biodesign), a stand-alone course (Posner, Wetmore and Bennett 1-credit), laboratory engagement (Wetmore and McGregor in labs of Helms-Tillery and Phelan), and a hybrid course (Ellison and Herkert). Pre- and post- tests were given to all students involved. All four models were found to have a statistically significant and positive effect in helping students be more ethically sensitive, have more knowledge of relevant standards, and have better ethical judgment. These results are not typical for traditional responsible conduct of research courses and demonstrate the valuable contributions of these education approaches. The success of this EESE grant led to a second NSF EESE grant to develop macroethics modules for the online CITI program.

In Summer 13, CNS-ASU conducted three separate sessions of "Science Outside the Lab: A Policy Dis-Orientation" for graduate students, reflecting a rapidly growing interest among NSE students and faculty. Developed and taught by Wetmore and Bennett and held in Washington, DC, the course offers graduate NSE students a chance to leave the lab for two weeks to explore the relationships among science, policy and societal outcomes. Students meet government officials, lobbyists, staffers, regulators, journalists, academics, museum curators, and others who fund, regulate, shape, critique and study science, and they engage in hands-on policy learning through tours and exercises like a mock congressional hearing where students present their ideas for new policies to congressional staffers in the House Science Committee's hearing room.

The previous success of the DC program has inspired a number of faculty to include funding for students to participate in it in their ERC, IGERT and education grant proposals. ASU currently has two Professional Science Masters programs – one in Science & Technology Policy and one in Solar Power Engineering and Commercialization – that require all of their students to participate in the DC program.

Bennett now leads the summer session programs, but brings in additional help to facilitate them. In Summer 12 CNS faculty Wetmore, CSPO Professor of Practice Gregg Zachary and former CNS post-doctoral fellow Delborne assisted with one session each. Each session is also facilitated by a student liaison who has participated in CNS immersion projects, taken multiple courses, and been mentored by Bennett and Wetmore. In Summer 13 there were two students who had gained the skills, knowledge, and enthusiasm about the social and political implications of nanotechnology to serve as a student leaders: Jen Fuller (PhD student, Environmental Social Science, ASU), Tracy Niday (Graduate, Chemistry and Biochemistry, ASU). The third session focused on sustainability policy and occured for a week each in Washington DC and in London UK.

In Summer 14, CNS-ASU will once again conduct three sessions of Science Outside the Lab. Because of the success of the two PSM degree programs that require participation in the program, this year there will be one session dedicated to each of them. The first session will focus on solar energy policy. The second session will be tailored to the needs of the PSM in Science and Technology Policy and will include natural scientists and engineers. The third session will be occupied by science and engineering students. The programs were filled by the end of Mar 14 and prospective paying applicants have been turned away for lack of space.

In Fall 09, CNS researchers Wetmore, Bennett, and doctoral student Trinidad began to collaborate with Trevor Thornton and the ASU node of the National Nanotechnology Infrastructure Network (NNIN). The collaboration has resulted in two major programs: First, CNS-ASU now contributes the Social and Ethical Implications training required of all researchers who seek to use the ASU NNIN facilities. The training is part of the standard NNIN lab safety training that occurs at least once a month. Bennett, Wetmore, and doctoral student Trinidad have all served as instructors in the course (discussed further below).

Second, the ASU NNIN Node cosponsors with CNS-ASU the ASU Informal Science Communication Program for graduate students. The program offers training sessions every two weeks for students in how to communicate with the general public about science and engineering and then gives them the opportunity to gain important practical experience by presenting their work on the floor of the Arizona Science Center. The basic idea behind the program is to help young scientists develop valuable communication skills. The added bonuses are that the public gets to know about the cutting edge research being done at ASU and the students are asked difficult questions about the social and ethical implications of their work that they must develop good answers to. The program began in Mar 10 and students present at the museum monthly.

CNS scholars at Georgia Tech have also been helping to facilitate education in the social sciences for grants that are primarily technical in nature. Shapira, Youtie, and Porter have been collaborating with Elsa Reichmanis, Professor, Chemical and Biomolecular Engineering, Georgia Institute of Technology on a new IGERT Program entitled Nanostructured Materials for Energy Storage and Conversion and have participated in the Program's inaugural seminar series by introducing students to "Trajectories of Global Nanotechnology Commercialization."

In 2007, CNS-ASU developed a partnership with a new degree program the Professional Science Masters in Nanoscience, led by the Department of Physics and the Department of Chemistry and Biochemistry, to offer a 2-credit graduate course in the societal aspects of nanotechnology. Bennett has taught this course for the program since 2008.

In 2011, Wetmore collaborated with Patrick Phelan to develop and run a new Professional Science Masters in Solar Power Engineering and Commercialization. The curriculum of the PSM, sponsored in part by a $700K NSF PSM grant, has a significant focus on the ethical and political issues inherent in solar power. Wetmore has taught a 2-credit graduate level class on Solar Energy Policy with Mike Pasqualetti for the first two years after program was created. This class in the past has evaluated and offer suggestions to the Arizona Science Center's "Solarville" exhibit. All students enrolled in the program will be participating in the DC summer session, which will continue to be a required component of the curriculum.

The third graduate student audience at CNS-ASU consists of those students in traditional departments and schools, as well as those in interdisciplinary programs, who are interested in CNS-related coursework. CNS-ASU faculty have established twelve graduate courses at ASU:

- In Spring 13, TRC 2 co-leader Wiek and Darren Petrucci, former director of the Design School, are offering "Design Thinking, Sustainability, and the Future of Nanotechnology in the City" in a cross-listed course between the School of Sustainability and the School of Design. The course brought together fourteen graduate students to redesign the architecture and urban form of Phoenix to reflect four scenarios generated by TRC 2 researchers. The course takes a complex systems approach to design and draws upon societal context, innovation models, nanotechnology applications and urban sustainability problems to inform the urban design proposals in preparation by the studio. The resulting product from the studio – a short film – has been shown in many diverse venues, including Phoenix Biosciences High School and CSPO's "New Tools" seminar in Washington, DC.

- In Spring 12, Selin developed and taught a research studio class through the School of Arts, Media and Engineering that explored the observation, documentation, analysis and summarization of large-scale collaborative events. Students in the class were trained either in ethnographic methods or observational media documentation and applied their skills in the field at the *Emerge* event (see **Section 9 Research Program, Accomplishments, and Plans**, RTTA 3). Subsequent to the event, and using the collected data, the students spent the remainder of the semester designing and developing a physical gallery exhibition, participating in the creation of a dynamic online media archive, and/or contributing to analysis of the *Emerge* event as a novel form of future-oriented deliberation."
- In AY 11-12, Guston developed and taught with CSPO Professor of Practice Gregg Zachary the two-semester sequence, "Science and Technology Policy" and "Advanced Science and Technology Policy," the core sequence for the STP PSM. The course achieved a novel synthesis of analytic and communication approaches and explored key tools like real-time technology assessment and anticipatory governance, as well as substantive topics like DIY biology and manufacturing, derived from the CNS agenda. Guston taught the sequence solo in AY 12-13 and AY13-14.
- In Spring 11, Fisher developed a new course entitled "Analysis of Scientific and Technological Innovation Systems," primarily for graduate students in the PSM in Science and Technology Policy Program. A number of HSD students have taken the course as well. The course draws on a number of Fisher's research projects within CNS.
- "Future Scenarios, Anticipatory Governance, and Sustainability – Urban Development in Phoenix" was offered by TRC 2 co-leader Wiek and RTTA 3 co-leader Selin in Sp 10. The course engaged 22 graduate students from five ASU graduate programs in systematically crafting visions of sustainability for Phoenix and developing governance strategies for transformative change. The course also integrated the theme of urban socio-technical systems and emerging technologies. As the course was embedded in a collaborative research project with the City of Phoenix to inform the adaptation of the General Plan, the course facilitated research in teams and involved faculty across ASU as well as stakeholder groups across the city. The course built capacity in anticipatory governance and attracted students to engage in subsequent research. Moreover, it created a network among stakeholders, professionals, and decision makers in Phoenix interested in "Nano and the City." In Spring 11, ASU awarded the course its President's Award for Sustainability. In Spring 12 Wiek reworked the course into "Sustainable Solutions: Options for Phoenix," to continue to engage graduate students in TRC 2 research. Three walking audits that brought together researchers, Kay and Wiek, with graduate students and community members has strengthened the novel methodology of walking audits to co-train community and academic actors on the complex, place-based urban sustainability syndromes, while seeking solutions (including nanotechnology).

- Wetmore created a new course in Spring 10 entitled: "Introduction to Analyzing Sociotechnical Systems," offered in the School of Human Evolution and Social Change. Not only were a number of nanotechnology topics covered, but students were also assigned a research project to develop a demonstration for NanoDays 2010. This class also fulfills a core requirement of the Professional Science Master's Degree program in Science and Technology Policy offered by CSPO. Wetmore taught this course again in Fall 10 and Spring 12 and 13 and attracted a number of HSD students as well.
- In AY 09-10, Boradkar developed a training program akin to InnovationSpace but for graduate students. Two students under his direction have performed additional research, design and development on nanotechnologies previously conceived by the undergraduate InnovationSpace students.
- "Nanotechnology: Law and Regulation," was taught by Marchant in the Sandra Day O'Connor School of Law in Spring 10. Several other CNS-ASU faculty participated in the course, including Guston, Robert, and Selin. As a major project the students explored potential regulatory and liability issues in the scenes developed by NanoFutures.
- "Governing Emerging Technologies," taught in Fall 08 and Fall 09 through the School of Politics and Global Studies by Guston and in Fall 10 and Spring 12 by Fisher, explores the Center's core concept of anticipatory governance and synthesizes many of the Center's findings. Students in the course were tightly integrated into the Center's activities, e.g., participating in the Oct 08 Visioning Workshop and the Nov 09 Equity Workshop. Several other CNS-ASU faculty have participated in the course including Conz, Corley, and Selin. This class also fulfills a core requirement of the Professional Science Master's Degree program in Science and Technology Policy offered by CSPO.
- "Energy and Energy Policy," taught by Bennett in Spring 09, is a 1-credit seminar for PhD students in chemistry that explores the dynamic interplay between scientific research, technological innovation, policy development, and cultural change surrounding large-scale energy system change in the 21st century.
- "Science, Technology and Developing Areas," a one-credit course offered through the Department of Chemistry and Biochemistry and the School of Human Evolution and Social Change, was developed in F 09 by Harsh and Wetmore to work through TRC 1 topics with graduate students. The course attracted graduate students from the social sciences, natural sciences, and engineering and explored the myriad issues that must be addressed for technical assistance to truly benefit the disenfranchised.
- "Nanotechnology, the Brain, and the Future," taught in the School of Life Sciences and the School of Politics and Global Studies, is a variable-credit course offered by Miller and Robert (Fall 07, Spring 08, Fall 08) as part of the E2E project. Students and faculty used it to prepare research projects for E2E and the CNS All-Hands meeting.
- "Science, Technology & Societal Outcomes," taught in the School of Life Sciences and the School of Human Evolution and Social Change by Wetmore and Bennett was offered in Spring 06 and Spring 07.

The Center has also been an integral part of the development of a new doctoral program at ASU, the Human and Social Dimensions of Science and Technology (HSD), which was approved by the Arizona Board of Regents in Dec 07 and matriculated its first class in Aug

08. CNS Associate Director Miller directs the HSD PhD program, and Guston, Robert, Sarewitz, Corley, and Wetmore serve on its Executive Committee. Other CNS faculty, including Fisher and Selin serve as members of its Graduate Faculty. In addition to the summaries of HSD students who are working specifically with CNS-ASU provided above, numerous other HSD students have participated in CNS-related activities over the life of the Center, including the scenario-based solar-to-fuels workshop, the anticipatory governance visioning workshop, CNS-ASU All-Hands meetings, and *Emerge*.

While the vast majority of classroom-oriented activities at CNS-ASU have occurred at ASU, in Summer 10 co-PI and RTTA 2 co-leader Scheufele and his Wisconsin team created an on-line class, Science 2.0: Media, Politics, and Emerging Technologies, for both graduate and undergraduate students, offered over iTuneU. This course is the third that CNS-ASU affiliates have offered completely on-line, with Harsh's undergraduate Science and Democracy in Winter 10 and Hays' Human Enhancement and Democracy class in Summer 10.

Undergraduate Education and Training

CNS-ASU organizes a variety of undergraduate education and research training experiences. Although there are none in the current year, in previous years, numerous undergraduates have written honors theses with CNS faculty, and undergraduates – mostly from the W.P. Carey School of Business – also complete honors theses in conjunction with their InnovationSpace coursework.

Previous honors students are also publishing their thesis research in CNS publications:

- Arielle Silverman, whose undergraduate thesis in Biology and Society surveyed a population with visual impairments about their attitudes toward nano-enabled therapies and enhancements in conjunction with TRC 2, published her work in the third volume of the *Yearbook*;
- Tobie Milford, whose undergraduate thesis in Religious Studies reviewed public participation in science literatures and analyzed TRC 1's Nanotechnology and Religion workshop, published his work in the third volume of the *Yearbook* and has written several entries for the *Encyclopedia of Nanoscience and Society*. Milford's undergraduate thesis also helped to win the Kelly Maxwell Outstanding Graduate Student Award from the Intergroup Relations Center Awards Committee and the Religious Studies award for "Outstanding Concurrent Major."

CNS has supported several undergraduate student interns since the last annual report: Sarah Hoke (TRC 2, Nano and the Future of the City database project), Daniel Escolin (videography support, including the videotaping and editing of all presentations and special projects), and Evan Taylor (TRC 2, Nano and the Future of the City/database development project). Tai Wallace worked on generating content for the TRC 2, Nano and the City/database development project. Wallace graduated in December, 2012 and has since been hired by the Arizona Department of Environmental Quality in the air quality division in special applications unit.

In addition to the numerous undergraduate courses developed in the first five years of CNS – including "Perspectives on Nanotechnology," "Justice and the Future," "Learning Community: Nanotechnology in Society," "Human Enhancement and Democracy," "Global Environmental Politics," "Technology and Society," and "Science and Democracy" – nanotechnology and society issues were newly integrated into two other undergraduate courses. Harsh revised the "Science and Democracy" course for Winter 10 as a 3-credit online course with interactive and video-enhanced oral exam modules, and Hays will taught an online version of Human Enhancement and Democracy in Summer 12. In Spring 11, Miller, Bennett, Harsh, and Wetmore developed a new, 125-student undergraduate course entitled "Introduction to Science & Technology Policy," which integrated discussions about nanotechnology into each of the course's five focal topics: health, food, military, economy, and environment. The course has been offered each Spring by other CSPO faculty. In Spring 14 CNS Post-doc de Ridder-Vignone developed this course into an online course and taught it.

CNS-ASU's long-standing relationship with InnovationSpace continued this year. InnovationSpace is a two-semester long, transdisciplinary course collaborative among the ASU Schools of Design, Engineering, and Business. It satisfies the design or project requirements for senior majors in each school by creating cross-functional teams who use an Integrated Innovation model to research, develop and refine real-world product concepts for paying sponsors. In AY 13-14 currently in progress, the students have been developing nano-enabled products and services to address issues of child safety and enabling autistic children. For the last two years, the student teams have been tightly aligned with the TRC 2 program (See **Section 9 Research Program, Accomplishments and Plans** RTTA 3/2).

During summer 2012, the Georgia Tech contingent of TRC 1 served as mentor to one of the NNIN's two REU students focused on the societal and ethical implications of nanotechnology. Duy Do, an electrical engineering major at San Antonio College, spent the summer in Atlanta studying the websites of about 60 companies doing research on water, agri-food, and energy nanotechnology. He researched the ways in which these companies were using nanotechnology and whether their products would affect equity issues. He presented his work in a report – "Nanotechnology Companies in the U.S.A: A Web-Based Analysis of Companies and Poverty Alleviation" – at the NNIN's August REU convocation in Atlanta.

Scheufele teaches a course in "Science, Media, and Society," which has been offered jointly to undergraduates by the Department of Life Sciences Communication and Science and Technology Studies. This new curriculum offering was informed heavily by the last 8 years of CNS-related work at UW, and has become a required course for all Life Sciences Communication majors at UW, one of the fastest-growing majors in the College of Agricultural Sciences. The course currently enrolls students from five different colleges at UW.

K-12 Education

TRC 2 has been actively engaging with science educators and students at the Bioscience High School through various partnerships and exchanges. Bioscience High School is a public high school in Phoenix that is a magnet for college-bound students interested in science, technology, engineering and math (STEM) education opportunities. TRC 2 is building upon existing relationships held by co-leader Wiek and faculty at the school. In the previous reporting year, the Bioscience High School welcomed the entire student body of the CNS Winter School on Anticipatory Governance for an exchange between graduate students and high school students. This past academic year faculty from the Bioscience served as speakers at the monthly Science Café Series (see **Outreach** section). Additionally, post-doc

Foley and graduate student Rushforth offered presentations to the entire sophomore class on the M52 Superfund Site. Bioscience High School has committed to taking on the M52 Superfund Site as this year's annual project for students to investigate the technical, scientific and social uncertainty that generate misunderstandings and perpetuate a lack of trust between regulatory agencies and citizens. That initial visit was followed by a presentation by Foley and the Maricopa County's Sustainability Manager, Jonce Walker, on the impact of the built environment on urban sustainability challenges. The Phoenix metropolitan area is located almost entirely within Maricopa County making the co-presentation between neighborhood and metropolitan scales apparent and meaningful for students. This co-presentation strengthened the ties between TRC 2, Maricopa County and Bioscience High School.

In a previous reporting year, CNS-ASU described the development of a graduate course that provided in-service K-12 teachers with research experiences and also helps them develop curricular materials for their own K-12 classrooms on societal aspects of nanotechnologies. CNS did not offer a version of the course in the current reporting year. Two teachers participated in the course in Spring 09, one in-service and one who is in the nano-science professional master's degree program and does not currently teach. The value of the course is demonstrated by continuing follow-ups by in-service teachers with Bennett, who has consulted with some of those in the course about the development of curricular materials and visited classrooms at Mesa High School and its Biotech Academy. In one of these classes the in-service high school teacher from Bennett's Nanoscience in Society course had her students choose specific technologies and analyze the social, political, and cultural aspects of that technology and then promote a policy position through an oral presentation to their class and prepare a letter to a congressional representative. Bennett was also a principal in the Citizens Engagement Program with High School Students in conjunction with CSPO and ECAST (see **Section 12 Outreach and Knowledge Transfer**).

CNS-ASU has also arranged for its Science Cafés, held monthly during the academic year in conjunction with the Arizona Science Center (see below) to provide in-service teachers with continuing education credit. In addition, CNS co-director Miller served as a primary consultant to two chapters (4 and 13) in *The Big Ideas of Nanoscale Science and Engineering* (Stevens et al. 2009) published by NSTA Press for K-12 science teachers. These chapters are based, in part, on a guide to nanotechnology in society education produced by CNS (Miller et al. 2007). Much of the work done with NISE Net and the Arizona Science Center (see sections above and below) reaches K-12 audiences. It is also the case that one of the target audiences for the *Encyclopedia for Nanoscience and Society* (Guston 2010) is high school students and teachers.

Informal Science Education

CNS-ASU has begun to have a significant impact on informal science education nationally through its partnership with the Nanotechnology Informal Science Education Network (NISE Net) to incorporate research on the ethical and societal implications of nanotechnology into museum programs and exhibits around the country. Early in its operation, CNS produced a guide to this topic (Miller et al. 2007) that NISE Net distributes as part of its Forums Guide and NanoDays Kit. This guide has also been distributed widely to science museums at NISE Net meetings and is available on the CNS-ASU website for download. In addition, NISE Net Director Larry Bell, who has attended nearly all of the CNS All-Hands Meetings and serves on the CNS Board of Visitors, has identified anticipatory governance as a central theme for future NISE Net programming and, more broadly, as the basis for a new model for the role of science museums in informal science education (Bell 2008). Most significantly are the series of workshops that occured conjunction with NISE Net to train museum staff in how to facilitate conversations about nanotechnology and society. Details of this strong collaboration can be found in **Section 12 Outreach and Knowledge Transfer**.

Practitioner Training

The Center has developed and piloted training modules in the ethical and societal implications of nanotechnology for scientists and engineers working in user facilities at the DOE Center for Integrated Nanotechnologies (CINT) and the National Nanotechnology Infrastructure Network (NNIN).

For the first few years, NNIN user facilities were strongly encouraged to use the video (created by Guston and others) and a survey was conducted to evaluate their experience. Respondents at 9 of the 11 user facility sites in the NNIN indicated that they were already using the video, and an additional site indicated that it would be doing so from this point forward. Four sites indicated that the video had been presented at a total of 117 training sessions, with the other sites indicating that users watched the video individually, with no formal records being kept. The sites indicated that approximately 1000 NSE researchers in total had watched the video. The actual use of the video varied. Some sites merely made the video URL link available. Other sites asked users to verify via a signature that they had viewed the video. Others required users to watch the video in groups. One group indicated that questions and comments sometimes follow, and one group indicated that they always follow the video with group discussion. Post-doc Reifschneider is currently attempting to follow up with the various NNIN sites to see explore the possibility of conducting an evaluation of this program.

While the video remains on the NNIN website for use at some sites, after much deliberation NNIN decided that face-to-face discussions of SEI issues would better engage the researchers at its user facilities. Wetmore attended a workshop in Jan 10 at Cornell University and Bennett attended a workshop in Oct 10 at Washington University in St. Louis to help inject CNS-ASU experience and knowledge into NNIN training across the country. Wetmore, Bennett and Trinidad have developed a thirty-minute module that is presented in conjunction with the health and safety training that all users of the ASU NNIN facility must successfully pass. The module introduces researchers to the practical implications and applications of CNS research and findings, while also making them aware of the support CNS can offer to young scholars in the form of PhD+ opportunities and coursework.

Wetmore and Sarewitz also participated as Faculty in the *IHEST European Summer School: Which Place for Science in the Public Debate?* at the Saline Royale d'Arc et Senans, France in Summer 10. This summer school was established in large part to help local and national French officials reflect on the protests during the government's effort to solicit input into its nanotechnology decisionmaking process. The summer school resulted in a publication that included Wetmore and Sarewitz's lectures in French.

Winter School

In the Winter 14 CNS-ASU hosted its second Anticipatory Governance of Emerging Technologies Winter School at the Saguaro Lake Ranch in Mesa Ariz. It was attended by 17 junior scholars (graduate students or PhDs fewer than three years out) and by faculty from the RTTAs and TRCs as well as the assistant and associate directors. The student participants represented 16 institutions from 8 countries. In the spirit of the Gordon Research Conference, intense topical sessions were interspersed with activities designed to build the group into a cohort and take advantage of the natural resources at the Ranch. The post-school evaluative session indicated that general format and topics were appropriate and facilitated a cohort model of learning that was deemed successful by participants. Based on feed back from this session and other comments CNS will conduct another Winter School in Jan 15. Highlights for the participants included their interactions with All-Hands and Board of Visitors attendees, as well as participants of the Futurescape City Tours research groups from Boston, Edmonton, Portland, Washington, DC, and Raleigh-Durham.

Table 3A: Education Program Participants, Irrespective of Citizenship

		Gender		Race					Mixed-incl.	Mixed				
Student Type	Total	M	F	NA	PI	AA	C	A	NA,PI,AA	C,A	Not Provided	Other Non-US	*Ethnicity Hispanic	Disabled
Enrolled in full degree programs														
Undergraduate	13	11	2			1	10	3					2	
Masters	18	7	11				17	1					2	
Doctoral	65	36	29			1	49	15					7	
Enrolled in NSEC Degree Minors														
Undergraduate														
Masters														
Doctoral														
Enrolled in NSEC Certificate Programs														
Undergraduate	17	6	11				16	1					1	
Masters														
Doctoral														
Practitioners taking courses														
Enrolled in NSEC Programs														
Undergraduate														
Masters														
Doctoral														
Practitioners taking courses														
K-12 (Pre-college) Education														
Teachers														
Students														
Total	**113**	**60**	**53**	**0**	**0**	**2**	**92**	**20**	**0**	**0**	**0**	**0**	**12**	**0**

Table 3B: Education Program Participants, U.S. Citizens or Permanent Residents

		Gender		Race					Mixed-incl.	Mixed				
Student Type	Total	M	F	NA	PI	AA	C	A	NA,PI,AA	C,A	Not Provided	Other Non-US	*Ethnicity Hispanic	Disabled
Enrolled in full degree programs														
Undergraduate	13	11	2			1	10	3					2	
Masters	16	6	10				16						1	
Doctoral	42	21	21			1	40	1					3	
Enrolled in NSEC Degree Minors														
Undergraduate														
Masters														
Doctoral														
Enrolled in NSEC Certificate Programs														
Undergraduate														
Masters														
Doctoral	9	4	5				9							
Practitioners taking courses														
Enrolled in NSEC Programs														
Undergraduate														
Masters														
Doctoral														
Practitioners taking courses														
K-12 (Pre-college) Education														
Teachers														
Students														
Total	**80**	**42**	**38**	**0**	**0**	**2**	**75**	**4**	**0**	**0**	**0**	**0**	**6**	**0**

12. Outreach and Knowledge Transfer

The outreach activities at CNS-ASU are, on one hand, tightly integrated with research and education and, on the other, governed by a strategy that aims at developing broad-based capacities among both NSE researchers and various publics. As described in the strategic research plan, CNS-ASU pursues an agenda of foresight, engagement and integration in order to advance its strategic goal of building capacities for reflexivity and anticipatory governance in the NSE enterprise in particular and in society more broadly. CNS-ASU thus has a dual-tracked outreach strategy that includes, in one track, outreach to various lay-publics (**engagement**) and, in the other track, outreach to scientists and engineers (**integration**). In addition, CNS has more traditional outreach and knowledge transfer to professional colleagues via workshops and presentations, as well as a modest technology transfer program associated with InnovationSpace. In YR 9, we have deepened our collaboration with museum professionals and published an important guide to practice. A highlight of YR 9 was publishing the inaugural issue of the *Journal of Responsible Innovation*.

Collaborations with the Nanoscale Informal Science Education Network (NISE Net)

"Nanotechnology is relevant to everyone's lives, and has important societal and ethical implications" is one of the original learning goals established by the Nanoscale Informal Science Education Network (NISE Net). This goal was somewhat of a departure from traditional science museum content; soon after its creation, NISE Net recognized that CNS-ASU could be a valuable partner in developing programs in this area. For the past several years, CNS-ASU has developed demonstrations, presentations, posters, and film scripts for NISE Net to help introduce nano-and-society ideas to museum guests and have helped build up significant trust and good working relationship. Over the last 2 years this relationship has strengthened considerably. In Summer 2012, CNS-ASU officially became a "core partner" of NISE Net, a position formerly reserved for major subcontractors. Bennett, Miller, and Wetmore continue to serve on the NISE Net content committee and Miller serves on the advisory committee (and NISE Net PI Bell serves on the CNS-ASU Board of Visitors). The relationship is now truly an integrated partnership. Both groups are engaged in projects that simply would not be possible without the collaboration.

Nano and Society 'Train the Trainer' Workshops

After several years of collaboration, CNS and its NISE Net colleagues realized that a major stumbling block to our collective effort was that people working on the floor of museums were simply not comfortable straying from their role of serving as experts in science facts. In last year's report, we detailed the extensive activities undertaken to address this problem, including: 1) the production of a series of seven short videos about nanotechnology and society that could be used in museum training sessions or as basic technology and society teaching tools (available at http://nisenet.org/catalog/tools_guides/nano_society_training_materials) (NISE Net reports 877 unique page views); 2) a series of four regional workshops that reached more than 100 museum professionals from more than 50 science museums and centers (503 unique page views); 3) a series of subsequent engagements including online forums, conference calls, and a follow up workshop at the NISE Net annual meeting in Dec 12 in Boston; the inclusion of materials in the 2013 NanoDays kits; and the further professional dissemination of this material at 4S and S.NET meetings and meetings with museum professionals at the Science Museum, London, and at the University of Edinburgh.

The workshops were groundbreaking as the first nation-wide training program initiated by NISE Net and one of the first nation-wide museum training programs ever in the US. This success convinced NISE Net to develop additional training programs every year. The training programs helped to spark a shift in how science centers relate to their visitors. Many participants have wanted to engage the public in discussions about values and futures, but had not yet made it a normal part of their interactions. Many have remarked that the workshops gave them the courage, tools, and support to begin to make a concerted push for on the floor conversations. The first paper from this project has been published as Ostman et al. (2013).

In the current reporting year, the CNS/NISE net team has followed the workshops up with the publication of a booklet, "Nanotechnology and Society: A Practical Guide for Engaging Museum Visitors in Conversations." This guide encapsulates many of the lessons of the workshops into an easily accessible booklet. The guide serves as an introduction for museum professionals new to the topic and a refresher for those who participated in the workshops. The guide was included in the 250 2014 Nanodays kits that were distributed this spring, and it is currently available for free download at: http://www.nisenet.org/catalog/tools_guides/nanotechnology_society_guide (96 unique page views). In addition, Wetmore and Bennett offered a NISE Net webinar in Mar 14 (archived at: http://nisenet.org/community/events/online_workshop/online_brown-bag_nano_society_recorded) and will follow up in May 14 with a second webinar to the Association of Science and Technology Centers, both focused on delivering the training information to a broader set of museum professionals.

Mini Nano Exhibit

Bennett and Wetmore served as consultants on one of the most ambitious projects that NISE Net has performed – the Mini Nano Exhibit project. CNS scholars provided valuable feedback and helped to evaluate the 200 square foot exhibit that NISE Net developed to focus on nanotechnology in everyday life. The original plan to produce 50 copies of the exhibit increased to 70, and they were distributed to museums across the country. Because of the collaborations NISE Net designated one of the first five exhibits produced to be sent to the Arizona Science Center to give CNS-ASU scholars easy access to the display as we develop further activities around it, e.g., a discussion space for the Winter School. NISE Net estimates that Mini Nano reaches more than 7 million visitors each year.

Nanoequity Card Game: "Nano Around the World"

NISE Net has also been instrumental in developing the nanoequity card game, "Nano Around the World." Some of the NISE Net leadership were present the first time the game was introduced at the 2011 S.NET annual meeting and asked TRC 1 if we would be willing to jointly develop the game. Since Nov 11 Wetmore has collaborated with NISE Net to refine the text, develop new graphics, and review the content for consistency and accuracy.

The game has served two important interrelated purposes. First it has been very effective in getting members of the public to understand current and potential applications of nanotechnology, consider the equity issues inherent in the current system, and reflect on what their own goals for nanotechnology might be. It has been used by CNS members to teach high school students, undergraduate courses, and museum audiences. Museum professionals have used it in science summer camps as well. Wetmore alone has administered the game about 20 times. Second, the game has been very useful as a training tool. It was when NISE Net administrators played the game in January 2012 that they became convinced that workshops in nano and society would be possible. Since then we have used the game to introduce the topic at the beginning of every Nano and Society workshop, and we used it to break the ice at the 2013 and 2014 Winter Schools and teach participants about public engagement.

While “Nano around the World” has been embraced by many museums and is being used frequently, it did not quite fit the normal museum demonstration format because it works best with players who are in their teens or older and the game takes 20-30 minutes to play. Consequently, Wetmore and a number of S.NET colleagues have developed a simpler version of the game called “You Decide” that can be played with children as young as 5 and in a timeframe as short as 3 minutes.

Hard copies of both games were distributed to the 50 institutions that took part in the Nano and Society Workshops. Digital versions are currently available for free download at nisenet.com (“You Decide” has 866 unique page visits). A hard copy of the “You Decide” game was included in both the 2013 and 2014Nanodays kit that was sent to 250 sites across the country. The game has been played all over the world. It is reasonably uncommon now to run a game with a group of people who have never played it before as science centers and public outreach groups from research programs like the NNIN facilitate the game frequently.

Three Angry Scientists

In Jan 12, playwright Melanie Wehrmacher completed the script of a ten-minute play, “Three Angry Scientists,” commissioned by the Science Museum of Minnesota (SMM) and based on an idea from Guston derived from his scholarship on the role of science in regulatory decision-making. SMM hosted performances of the play in Spring 12, and Wehrmacher has now completed a new version of the play that introduces nanotechnology, in the form of a nano-enabled drug, into the decision-making of the scientists who are debating whether or not to approve the drug as safe and effective for human use. A film of the play is now available for free download from the NISE Net website: http://www.nisenet.org/catalog/media/three_angry_scientists. As of Jan 14, there were 1322 loads of the film on Vimeo and 250 plays on YouTube. NISE Net also included the film on DVD in its 2014 NanoDays kit, distributed to 250 museums and science centers.

Collaborations with the Arizona Science Center

Over the past two years, the already strong collaborations CNS-ASU has had with the Arizona Science Center have strengthened considerably. The Informal Science Education Program that CNS coordinates with the ASU node of the NNIN sends a group of graduate students to present on the museum floor at least once a month throughout the academic year, including the annual Nanodays event. CNS’s oldest outreach activity – the Science Café – has been held monthly during the academic year at the Science Center since 2007. Projects like these have built up a great deal of trust between CNS scholars and the Arizona Science Center administrators. They now see CNS as one of the first organizations they go to in order to develop joint projects.

The Science Center has also opened its doors as a place for CNS scholars to develop and test new projects and to work collaboratively on sponsored research. In the current year, Bennett is part of the ASC team that carries out an NIH Pathways grant. The Science Center is also helping CNS researchers Wetmore and Bennett to develop a small museum exhibit in conjunction with the Life Cycle Nanotechnology grant the EPA recently awarded ASU. CNS also provides an expert resource to the Science Center.

Science Cafés

The CNS-ASU Science Café series continued this year. It is hosted on the third Friday of every month during the academic year by the Arizona Science Center in downtown Phoenix. The theme for the YR 9 series was citizen science. Speakers and topics this reporting year included: "Bridging the Gap: Meeting Challenges, Building Capacity" by Stacie Beute of the Desert Botanical Garden, "New Technologies, New Audiences" by Darlene Cavalier, SciStarter Founder and Senior Advisor to Discover Magazine, and "Citizen Science Goes to Mars!" by Sheri Klug Boonstra, Director of the Mars Education Program at ASU's Mars Space Flight Facility. Attendance has been flagging, however, and we are re-evaluating both the location and the style of presentation.

NanoDays 2014

As in previous years, CNS-ASU is participating in NanoDays by adding the societal "so what?" twist on the information and materials provided by NISE Net. In coordination with the NanoDays national program, CNS-ASU sponsored three days of demonstrations about phenomena at the nano-scale. Two-dozen students from graduate classes taught by Bennett and CSPO visiting assistant professor Jennifer Richter as well as students newly active in the Informal Science Communication Program participated in public displays at the Tempe Festival of the Arts, a street art fair that attracted upwards of 250,000.

Other Museum Collaborations

Partnership for Education on Climate Change, Engineered Systems, and Society (CCEP)
In YR 6, Miller (then co-PI) received a CCEP award (NSF #1043289) to establish a coordinated national network of regionally- or thematically-based partnerships devoted to increasing the adoption of effective, high quality educational programs and resources related to the science of climate change and its impacts. This award to the US National Academy of Engineering (Rachelle Hollander, PI) established a Phase I CCEP in collaboration with ASU, the Museum of Science-Boston, the University of Virginia, the Colorado School of Mines, and the Phoenix Union High School District. It focused on the impacts of climate change for engineered systems, and its goal was to catalyze and transform engineering education in science museums, cities, and undergraduate programs to prepare current and future engineers, policymakers, and the public to meet these challenges. At the end of January 2013, the Partnership hosted a conference on the impact climate change will have on America's infrastructure. It brought together 75 scholars and professionals from a variety of backgrounds for two and a half days to discuss climate change science, engineering solutions, policy and governance challenges and strategies, sea level rise and storm surge, local government solutions, Native American perspectives, and engaging the public. The project ended in Aug 13 having unsuccessfully applied for a Phase II award.

Frankenstein Bicentennial Project

Guston and ASU colleague assistant professor Ed Finn, who directs the ASU's Center for Science and the Imagination, have launched the Frankenstein Bicentennial Project, to recognize and celebrate the theme of creativity and responsibility in Mary Shelley's gothic novel, *Frankenstein, or The Modern Prometheus*, first published in 1818. Together with co-PI Helms-Tillery, Finn (PI) and Guston (co-PI) received a small award from NSF to host an interdisciplinary, cross-sectoral workshop to explore new ways of collaborating and set new project agendas around the project themes. The workshop will take place 28-30 April 2014. Guston and Finn will seek to integrate the project with the CNS-supported *Emerge* event in 2017 or 2018 and carry on through it many of the relationships with scientists and engineers as well as with the museum community and various publics that CNS has pioneered. While no CNS funds have been expended on it, this project develops and extends CNS attention to anticipatory governance and responsible innovation. In addition to the $50K NSF workshop award, the project has expended or had pledged or committed approximately $450K from various ASU sources.

Broader Engagement Programs and Activities

New Tools for Science Policy

CNS-ASU is leveraging the CSPO DC office to reach out to policy audiences. In YR 9 several CNS researchers presented at CSPO's New Tools for Science Policy series, which asks: How do we know what science is "the right science" to do? How can we effectively orient the vast research enterprise to make real progress toward societal goals? Since its inception, CSPO and its network of researchers have been developing models, tools, and methods to help address fundamental questions in science policy. CNS researchers met DC policy audiences to catalyze discussions and collaborations between science policy researchers and decision makers about new ideas and approaches for improving the social value of science and technology. YR 9 CNS researchers included: Bennett and Herring of the Museum of Life and Science on "Transforming and Repositioning the American Science Museum: New Tools for Engaging the Public" in May 13; and Foley and Petrucci on "Design Thinking, Sustainability, and the Future City" in Feb 14. Selin and de Ridder-Vignone are scheduled to present on "Deliberating Differently: The Futurescape City Tours" in Jun 14.

Informal Science Communication Program

During YR 9, CNS-ASU and ASU's node of the National Nanotechnology Infrastructure Network (NNIN) continued a program in informal science communication in cooperation with the Arizona Science Center. Graduate students interested in working with the public to promote a broader understanding of science and technology receive training in methods and techniques to engage with diverse audiences. These "Science Liaisons" then have the opportunity to work on the floor of the Arizona Science Center once or twice a month during the semester. Students of all disciplines are invited to apply. Faculty leads Thornton, Wetmore, Bennett, and student leader Trinidad provide ongoing support and mentorship through informal monthly group meetings and an online organizational space in the university's courseware system, Blackboard. A set of informal and formal science educational resources, training materials, and a collaboratively-edited Google calendar schedule are accessible through the community site. Thirty-five students are now members of the online group and receive regular announcements about program activities; ten students have completed the training and are active volunteers. On average, during each visit to the Science Center the students engage with 60-70 museum guests. The program has significantly strengthened the relationship between CNS-ASU and the Arizona Science Center. This reporting year, Trinidad has begun to package the training regimen that all student volunteers receive into an exportable format. Wetmore will be using this program in Apr 14 to train graduate engineering students at the University of Western Cape to give Nanodays tabletop demonstrations at the Cape Town Science Center.

ECAST

In Apr 10, the Woodrow Wilson International Center for Scholars (WWIC) released the report *Reinventing Technology Assessment: A 21st Century Model* by Richard Sclove, founder and senior member of the Loka Institute, a non-profit research and advocacy organization concerned with the social, political, and environmental repercussions of research, science and technology. The report gives an overview of participatory technology assessment, reviews its applications in Europe and some prototypes in the US, and it forwards a proposal to create the ECAST network – Experts and Citizen Assessment of Science and Technology (www.ecastnetwork.org) – a consortium of NGOs, non-profits and universities that administer public engagement events on scientific and technological topics relevant to policy makers. Guston and a network of partners at WWIC, Loka, Museum of Science Boston, Pomona College, CSPO and others discuss projects, funding mechanisms and network governance in regular conference calls. Since the report, ECAST partners have conducted several small-scale demonstration citizen engagement projects at several home institutions about emerging technologies including geoengineering, nanotechnology, and synthetic biology. ECAST has been instrumental in coordinating the participation of US sites in the Danish Board on Technology's World Wide Views (WWV) on Global Warming (which overlapped substantially with NCTF sites) and the WWV on Biodiversity held in September 2012.

In the current reporting year, ECAST, via ASU, has been awarded a $200K cooperative agreement from the US National Aeronautics and Space Administration to perform a prospective, participatory technology assessment of the proposed Asteroid Initiative in which NASA would plan on capturing a small asteroid for purposes potentially including planetary defense, commercial development, and preparation and planning for other human deep space missions including Mars. The award contains funds for face-to-face deliberation projects at ASU and in Boston, coordinated by the Museum of Science, and virtual deliberations, coordinated by SciStarter.

Presentations to Public Audiences

Beyond those mentioned above, highlights in YR 9 include:

- Wetmore, "Nano Around the World," *Adult Night*, Arizona Science Center, 3 May, 2013;
- Foley, "Scenarios: A Means to Understand Future Implications of Science and Technology," BioScience High School, Phoenix, 18 Nov 2013;
- Miller, "Futurescape City Tours: Public Engagement in the City," President's Umbrella Tours, Portland State University, 26 February 2014; and
- Scheufele, "Why Polarized Debates Used to be Good for Us," TEDxUWMadison, 17 January 2014.

Presentations to Policy and Professional Audiences

Beyond those mentioned above, highlights in YR 9 include:

- Scheufele, "Science Communication as Political Communication," Sackler Colloquium on the Science of Science Communication, II, National Academy of Sciences, 23 September 2013;
- Corley, "Creating Collaborations for Communication about Nanotechnology Regulation," Sackler Colloquium on the Science of Science Communication, II, National Academy of Sciences, 23 September 2013; and
- Guston, "NASA's Asteroid Initiative: Partnership and Participatory Engagement," NASA Asteroid Initiative Ideas Synthesis Workshop, 22 November 2013.

Integration Programs and Activities

Integration with technical colleagues in the sciences and engineering continues to be a key component of CNS-ASU's work – stretching from research to education, engagement, and outreach. It continues to be a key aspect.

National Nanotechnology Infrastructure Network

In addition to the Informal Science Education Training program for graduate students mentioned previously, the CNS-ASU continues broader discussions about integrating SEI issues in the NNIN. In Nov 11, Bennett attended the annual NNIN SEI Coordinators meeting at George Washington University where he presented such CNS-ASU programs such as the DC summer session and the 1-credit course for scientists and engineers. Wetmore and Bennett have developed with Thornton, leader of the ASU NNIN node, a twenty-minute module on SEI issues that is currently presented monthly in conjunction with the health and safety training that all users of the ASU NNIN facility must successfully pass. We use this orientation as a means to introduce researchers to the practical implications and applications of CNS research and findings, while also making them aware of the support CNS can offer to young scholars in the form of PhD+ opportunities and coursework.

Because of this engagement and the leadership that went into the Congress on Teaching the Social and Ethical Implications of Research that was co-sponsored by CNS and the NNIN in 2011, Wetmore was asked by the NNIN – now centered at Stanford – to serve as its SEI network coordinator. He took over this position in July 2013 and over the past year has worked on winding down the various activities as the grant is due to conclude in the very near future. The NNIN funding has provided the finances necessary to hire postdoc Kiera Reifschneider, a recently minted ASU Chemistry PhD. Reifschneider has assisted with a number of CNS projects including an evaluation of the Science Outside the Lab program.

In Aug 13 Wetmore, Bennett, and Reifschneider also ran an ethics engagement exercise with the 100+ NNIN REU students at their annual convocation at Georgia Tech. Student feedback on the exercise was extremely positive. One student who applied to the NNIN REU program this year said that the one hour ethics program caused her to completely rethink her career trajectory and compelled her to focus on doing work with an eye towards developing countries.

The Stanford-led NG-NNIN was one of two finalists in NSF's recompete of the NNIN, and the SEI component was favorably received by the reviewers. After delays caused by the government shutdown in Fall 2013, in Spring 2014 NSF announced it would not fund either of the NNIN proposals. Wetmore continues as SEI director of the NNIN as the grant sunsets over the next year. There has been some mention by NSF of bridge funds and a new competition, but it is not clear if bridge funds will include the SEI component. The research team is currently reworking the idea of building an SEI network on top of a technical research network to adapt it for the LCNano program.

Research Integration Presentations

Beyond those mentioned above, highlights in YR 9 include:

- Wetmore and Bennett, "Education and Training Panel," *Sixth International Meeting on Synthetic Biology (SB 6.0)*, Imperial College, London, 10 July 2013;
- Foley, "Integrating Nanotechnology into Comprehensive Interventions to Global Challenges," Gordon Research Conference on Environmental Nanotechnology, June 2013;
- Harsh, "Designing a Community Engagement Short Course for Engineers," Global Engineering Symposium, Engineers without Borders Canada National Conference, January 2014; and
- Wender, "Towards Anticipatory Life Cycle Assessment," 2nd Sustainable Nanotechnology Organization (SNO) Conference, November, 2013.

Collaborations with Academic Colleagues

Society for the Study of Nanoscience and Emerging Technologies (S.NET)

After CNS-ASU served as co-organizer and host of S.NET's third annual meeting in Nov 11, S.NET continues to thrive in a way now largely independent from the original investments made by NSF. While many CNS-ASU faculty and students participated in this fifth annual meeting, and while both CNS's were recognized in the program as "sponsors," the program committee had only one CNS (UCSB) member and the newly elected leadership of the society is fully independent of the CNS's. Specifically, CNS-ASU participation included: CNS-ASU board of visitors member Andrew Maynard provided a plenary address; Youtie collaborated with former CNS-ASU and now CNS-UCSB post-doc Kay and UCSB faculty Applebaum in a presentation on nano corporate strategies in Latin America; former CNS-ASU communication coordinator and current ASU doctoral student Gano organized a panel on "Data, Definitions and Epistemic Questions" that included a presentation by post-doc Reinsborough; Gano also organized a roundtable on data sharing issues for the field; Youtie, Shapira and colleagues presented a paper on bibliometrics of the next generation of complex nanomaterials; Guston chaired a panel on the nano-enhanced city that featured TRC 2 collaborators Foley, de Ridder-Vignone and Petrucci; Guston also served as moderator and discussant for a screening of Regan Brashear's documentary, *Fixed*, as a panelists for a discussion on responsible innovation, and as an official mentor to four early career researchers; and CNS-FSE fellow Wender presented on anticipatory life cycle analysis.

Governing Emerging Technologies: Law, Ethics and Policy (GET)

CNS-ASU provided significant support to the first "Governing Emerging Technologies: Law, Ethics and Policy meeting, organized by Marchant at ASU's Sandra Day O'Connor School of Law. Guston served on the program committee and organized and chaired a plenary panel on responsible innovation. CNS-ASU speakers included co-PI Scheufele, senior investigator Woodbury, TRC 2 post-doc Foley, RTTA 2 graduate student Kim, senior investigator Poste, and senior investigator Marchant. CNS-ASU is providing similar support to the second annual meeting to be held in May 14.

Presentations to academic and professional audiences
Beyond those mentioned above, highlights in YR 9 include:

- Castillo, "Impact of Nanotechnology-infused Industries on Employment and Wage Inequality in the United States," Atlanta Conference on Science and Innovation Policy, 26-28 September 2013;
- de Ridder-Vignone, "Material Deliberation as Public Engagement in the Nanoscale Informal Science Education Network," Science in Public, 2013: Critical Perspectives on Making Science Public, University of Nottingham, UK, July 2013;
- Selin, "Prototyping Nanotechnology: Experiences with Design Education," Technology and Innovation Management Research Seminar, Danish Technological University, Copenhagen, 25 October 2013; and
- Wetmore and Bennett, "Social and Ethical Implications of Nanotechnology," NNIN REU Convocation, Atlanta, 14 August 2013.

Collaborations/Interactions with Industry and Other Sectors

Governance Scenarios for Cities (Phoenix)

Throughout the past four years, TRC 2 has repeatedly conducted engagement activities with expert and stakeholder groups, including industry. In this reporting year, the focus of engagement centered on sharing the "Nano and the City: Future Scenarios of Nanotechnology Innovation." The scenarios were constructed with participation from representatives from the Arizona Corporation Commission (ACC), Arizona Nanotechnology Cluster (ANC), Arizona Biotechnology Association (ABA), Arizona Technology Council (AzTC), Arizona Technology Investors Forum (ATIF), Maricopa Association of Governments (MAG), various city officials, Greater Phoenix Economic Council (GPEC), Intel, SDC Materials, Phoenix Revitalization Corporation, and Bioscience High School. We visualized the scenarios in collaboration with the ASU School of Design through the production of a 15-minute film. The film is being shared via both online and in-person presentations. One recent presentation re-engaged with the ANC, ABA, AzTC, ATIF, MAG, GPEC and local industry at a monthly meeting of the ANC, and we will also be sharing the film with the Arizona Chapter of the United States Green Building Council.

CNS Private Sector Engagement

CNS-ASU postdoc Sarah Davies led the CNS private sector engagement initiative from October 2010 to September 2012 thanks to a supplemental NSF grant. While here in Arizona she developed an internal database and convened a workshop on "Nanotechnology, Business and Anticipatory Governance" in YR 7. In October 2012 she assumed a new position in the Department of Media, Cognition and Communication at the University of Copenhagen. The most recent product of her work is a special issue of *Nanotechnology Law & Business* vol. 9, iss. 3, that she co-edited with Noela Invernizzi. The issue examines private sector nanotechnology in developing countries, the influence of regulation on markets, and the ways in which corporations inform the public about their work.

InnovationSpace

CNS-ASU has a modest technology transfer program through its support of InnovationSpace (ISpace). One important output of ISpace is an invention disclosure by each of the cross-functional undergraduate teams. ISpace teams working with CNS have disclosed 12 inventions to ASU's technology transfer arm, Arizona Technology Enterprises (AZTE) and at the end of the year will submit 3 additional invention disclosures. These disclosures have generally been the endpoint of technology development from ISpace, as neither it nor CNS-ASU has had the resources to perform follow-up research and development – although ISpace faculty leader <u>Boradkar</u> and <u>Guston</u> are attempting to cultivate potential sources of support.

Journal of Responsible Innovation

In Aug 13, <u>Guston</u> signed a contract with Taylor & Francis to publish the *Journal of Responsible Innovation* (*JRI*) under their Routledge imprint – the world's largest publisher of social science journals. The effort had started several years earlier, when <u>Fisher</u> and several European colleagues began to draft a proposal. They eventually brought <u>Guston</u> on board, and together they revised the proposal and offered it to several presses (MIT, Sage, Oxford) and finally found a partner in T&F. *JRI* has an internationally esteemed set of associate editors and members of its editorial board. Volume 1, issue 1 appeared online and in print in Feb 14 (http://www.tandfonline.com/toc/tjri20/current#.U0ID915tiCU). *JRI*'s first issue will remain open access in perpetuity, and select and timely articles in future issues will be open access as well. The journal will also abide by the open access policy of the United Kingdom. In addition to an opening editorial authored by Guston, Fisher and the other associate editors, CNS senior investigator and associate director for anticipation Selin has a piece in the inaugural issue.

Presentations to private sector/industrial audiences
Beyond those mentioned above, highlights in YR 9 include:

- Scheufele, "From Behavior Change Research to Program Design," Association of Energy Services Professionals, 7 October 2013.
- Guston, "Responsible Innovation," Society of Environmental Toxicology and Chemistry, Glasgow, UK, May 2013.

Documentary and Video/Media Projects

In 2013, CNS-ASU revamped its website (cns.asu.edu) with the goal to demonstrate CNS-ASU's recognition that interdisciplinary and integrated communications about the societal dimensions of nanotechnology require a diverse outreach strategy. CNS-ASU thus continues to develop its new media project to infrastructure, workflows, and capacities. The goal of the project is to expand the reach of the Center's regular research and engagements through a variety of media.

Our goal has been to video as much as possible and make it accessible to a broader audience through the website. To this end we have been producing videos of CNS's Occasional Speaker series; they are available at: http://vimeo.com/album/1542414. We have been recording the CNS Science Café Series for several years as well, posting those videos at: http://vimeo.com/album/1662457. We have also tried to highlight specific faculty and projects by compiling short videos of them discussing their work. We have also disseminated the short films that Wetmore and Bennett developed for the Nano and Society workshop program.

Fixed

Regan Brashear, former CSPO filmmaker in residence, completed her film "Fixed: The Science/Fiction of Human Enhancement," which generously credits CNS-ASU as assisting with the film. Over the course of making the film, she interviewed Center faculty including Guston and Miller, and the completed version includes significant footage of CNS collaborator Wolbring. Guston moderated a screening of the film at the S.NET annual meeting in Boston and it was scheduled to be shown at the upcoming EuroScience Open Forum in Copenhagen but appropriate arrangements could not be made. Guston will moderate a CNS-sponsored screening at the upcoming Governing Emerging Technologies meeting in May 2014.

Lab-Life

Filmmaker Frank Theys continues his work on a documentary film that involves the work of RTTA 4/STIR embedded humanists. The film is produced by Savage Films (Belgium) and Cobos Films (The Netherlands) in a coproduction with the public broadcaster ZDF/ARTE (Germany/France), supported by the Flemish and the Dutch Film Funds, the European MEDIA Program and the CERA Art Foundation. The director Theys expects a 90 minute cinematic release and a 60 minute television version to be distributed by Autlook Films (Austria).

13. Shared and other Experimental Facilities

While CNS-ASU has no physical science or engineering experimental facilities as such, it has created a nexus of exciting, cutting-edge inquiry that has drawn large numbers of scholars, many of them international, to visit and collaborate with us in a variety of capacities. The Center has a physically coherent space – integral with its parent center, the Consortium for Science, Policy and Outcomes (CSPO) – and sufficient capacity and flexibility to host visitors. To date, since beginning operation in Oct 05, and according to rigorous selection criteria, CNS-ASU has hosted numerous visitors including one hundred and two (102) international scholars, students, and policy practitioners from approximately two-dozen (24) countries. These numbers do not include dozens more international visitors to the Georgia Tech and University of Wisconsin-Madison sites, nor do they include some sixty-five (65) international visitors to the ASU Tempe campus who attended the 2011 S.NET conference and the 2013 Communities of Integration workshops. This section reports on the interactions that CNS-ASU has generated, which in turn point to the Center's value as a destination for visiting international scholars and its role as the central node in a widening international network.

To provide meaningful structure for our reporting on these visits, we limit our account here to include only a subset of these interactions based on three rigorous selection criteria. First, we only report on visitors who come from outside the US to CNS-ASU in Tempe. Thus, in past years, we have not counted Bowman (Northern Ireland) or twelve other international visitors who attended the fourth STIR project workshop or three UK visitors who attended the US-UK dialogue on responsible innovation, since these meetings were both held in Washington DC. Second, we only report on visitors who have no formal positions within US institutions, whether at ASU or elsewhere. Thus, as in past years, we do not count international visitors such as Gjefsen, who currently have appointments at another US institution. Third, we only count one member of each group of two or more visitors from the same institution or country (except in cases where members engaged in separate Center interactions that did not involve the group as such). We thus have counted Naranjo (Ecuador) and Hosono (Japan), but not the other five scholar-practitioners who comprised the same South American and Japanese delegations, respectively.

In YRs 1-8, CNS-ASU was visited by ninety (90) international visitors who fit these criteria. Visits from these people varied in length of stay, ranging from a few days to several months, but in nearly every case the visitor provided a lecture or seminar on his or her work related to nanotechnology in society and met intensively with CNS-ASU researchers. These visitors included faculty, students, and policy practitioners.

In YR 9, the following ten CNS-ASU visitors fit the three criteria specified above:

1. Christian Beaudrie - University of British Columbia, Canada
2. Laura Cabrera - University of Basel, Switzerland
3. Silvia Casini - Università Ca' Foscari Venezia, Italy
4. Sarah Davies - University of Copenhagen, Denmark
5. Grace Eden - University of Oxford, U.K.
6. Steven Flipse - Technical University of Delft, Netherlands
7. Maria Karaulova - University of Manchester, U.K.
8. Harro Van Lente - Utrecht University, Netherlands
9. Georgia Miller - University of South Wales, U.K.
10. Sally Randles - University of Manchester, U.K.
11. Jie Ren - Beijing Institute of Technology, China
12. Roberto Toledo - INS HEA, France

YR 9 CNS-ASU visitors consist of twelve students/researchers who come from eight countries. Several YR 9 visitors are developing research plans that grow out of their interactions with the Center. Ten were participants in the Winter School. In general, all visiting graduate students receive mentorship from CNS-ASU researchers and most have opportunities to present and to publish.

Sample publications or publishing activity in YR 9 by previous international visitors to the Center that stemmed from or were shaped by their interactions with CNS-ASU include the following articles:

1. Erik Fisher and Daan Schuurbiers (2013). "Midstream Modulation." In van de Poel, I. Gorman, M.E., Doorn, N. and Schuurbiers, D. (Eds.), *Opening up the Laboratory: Approaches for Early Engagement with New Technology*. Wiley-Blackwell.

2. Erik Fisher and Arie Rip (2013). "Responsible Innovation: Multi-Level Dynamics and Soft Interventions." In Owen, R. Heintz, M. and Bessant, J. (Eds.), *Responsible Innovation: Managing the Responsible Emergence of Science and Innovation in Society*. Wiley. 165-83.

3. Selin, C. and. Guimarães Pereira, Â. (2013). "Pursuing plausibility." *Int. J. Foresight and Innovation Policy*, Volume 9 (2):93-109

During YR 9, several instances of knowledge transfer, dissemination, and application occurred, including those mentioned in conjunction with the STIR project (see RTTA 4/2) and the ongoing incorporation of Center ideas into EU and UK efforts aimed at Responsible Innovation (e.g., Stilgoe et al., 2013). After several visits to the US, Frank Theys continued filming the work of STIR “embedded humanists” within laboratories for his documentary entitled, 'Lab-Life'. (see RTTA 4/2). This is a documentary directed by Theys and produced by Savage Films (Belgium) and Cobos Films (The Netherlands) in a coproduction with the public broadcaster ZDF/ARTE (Germany/France), supported by the Flemish and the Dutch Film Funds, the European MEDIA program and the CERA Art Foundation. The film will have a cinema release (90 min.) and a 60 min. or series version for television and will be distributed by Autlook Films (Austria).

These activities and capacities have enabled CNS-ASU to become increasingly involved in arranging and participating in international events that take place outside of our physical space proper and that extend the reach and vibrancy of our network of partners and collaborators. They have also provided the template for activities anticipated under the proposal to NSF’s “Science Across Virtual Institutes” program for a “Virtual Institute for Responsible Innovation.”

14. Personnel

The Center is managed by a Director (Guston), three Associate Directors (Fisher, integration; Selin, anticipation; and Wetmore, engagement), and an Assistant Director (Bennett, education). An Executive Committee composed of the Center's team leaders and institutional PIs meets monthly by phone. In addition to Guston (ASU) and Miller (ASU), Center co-PIs are Elizabeth Corley (ASU), to recognize her work across RTTAs, Dietram Scheufele (Wisconsin) and Jan Youtie (GA Tech) – to recognize the deep partnership with those subcontracting institutions. We have removed Deirdre Meldrum (ASU), who is now advisor to President Crow on special projects, as she was no longer active in our programs.

CNS-ASU has experienced significant turnover among its three full-time staff: Regina Sanborn, promoted two years ago from Program Manager to Assistant Director, took on a new challenge with ASU's Engineering Research Center. In her place, CNS hired Deron Ash as Program Manager in October 2013. Michelle Iafrat, Program Coordinator, continues, and reports to Ash; and Daniel Hooker, Program Coordinator for communication, resigned for family reasons and CNS hired Jennifer Banks at 75% to coordinate communication for both CNS-ASU and VIRI.

CNS-ASU has a set of team leaders for each of its major RTTA and TRC research programs. These leaders are spread across the Center's participating institutions and in some instances overlap with institutional leaders (see below). The team leaders currently are:

RTTA 1: Jan Youtie, GA Tech; Jose Lobo, ASU
RTTA 2: Elizabeth Corley, ASU; Dietram Scheufele, Wisconsin
RTTA 3: Cynthia Selin, ASU; Kelly Rawlings, USC
RTTA 4: Erik Fisher, ASU; Elizabeth Corley, ASU

TRC 1: Jameson Wetmore, ASU; Susan Cozzens, GA Tech
TRC 2: Arnim Wiek, ASU; Sander van der Leeuw, ASU

This group convenes monthly in a telephone call as the Executive Committee. CNS-ASU also communicates internally through a regular lab meeting, held every other week, for personnel at ASU, and regular lab meetings held at similar intervals among the Wisconsin and GA Tech groups, as well as between GA Tech and ASU for TRC 1. A listserv dedicated to CNS-ASU affiliated personnel at all its institutions also facilitates communication.

Much of the interaction among CNS personnel is driven by both the preparation for and the consequences of the All-Hands meeting. The first All-Hands meeting, held 19-21 April 2007, involved more than fifty faculty and student researchers from the several universities involved in CNS-ASU, plus about one dozen specially selected nano-in-society scholars from outside of CNS. CNS-ASU held its second All-Hands meeting 23-25 Apr 08.

CNS-ASU held a Visioning Workshop in Oct 08 to engage in reflexive scrutiny of our future visions of anticipatory governance and RTTA. It included CNS-ASU research, education, and outreach leadership, as well as a few select outsiders and several of our NSE research collaborators. The meeting helped feed into the Center's strategic planning process and prepared for the All Hands meeting.

CNS held its third All-Hands meeting on 14-16 Jan 09, the major focus of which was preparing for the renewal effort. Seventy individuals were in attendance representing ASU (researchers, students and staff), CNS-affiliated universities (researchers and students), and others in the nano-in-society field. Our fourth All-Hands meeting was held 11-13 Jan 10, with sixty-four in attendance representing ASU (researchers, students and staff), CNS-affiliated universities (researchers and students), and several representatives from NISE Net. Our fifth All-Hands Meeting was held on 10-12 Jan 11, with fifty-seven in attendance representing ASU, CNS-affiliated researchers at other universities, several representatives from NISE Net, and a newly constituted Board of Visitors.

In the previous year, CNS-ASU held its All-Hands meeting – with 51 in attendance including its Board of Visitors – in conjunction with the 3rd Annual Meeting of the Society for the Study of Nanoscience and Emerging Technologies (S.NET), co-hosted by CNS-ASU and CNS-UCSB in Tempe, AZ
on 7-10 Nov 11.

Last year, CNS-ASU held its first Winter School on the Anticipatory Governance of Emerging Technologies. Because all team leaders were present for the Winter School, the Center did not hold an official All-Hands meeting, but instead invited all graduate students in the Center to meet with both the Winter School participants and the Board of Visitors, with whom they engaged in a "speed dating poster session."

In the current year, we repeated this organization of multiple meetings of the Center, the Board of Visitors, the Winter School and – specific to the current year – the group of Futurescape City Tours researchers. This overlap went over very well with all participants and we expect a similar arrangement in YR 10.

We also expect to organize a final meeting for the Center to which we would invite CNS-ASU "alumni/ae" back for a larger intellectual gathering.

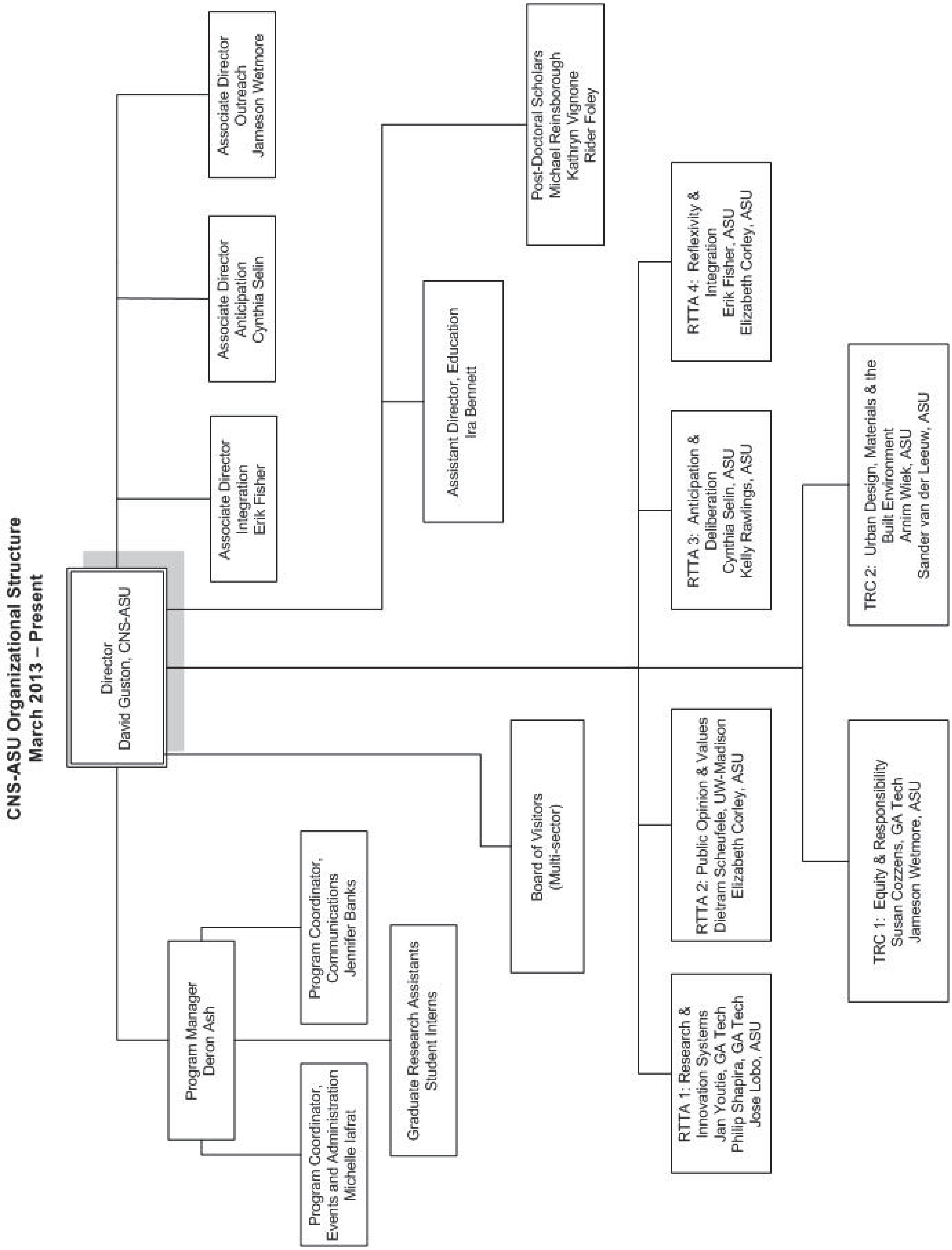

CNS-ASU Organizational Structure
March 2013 – Present
Director
David Guston, CNS-ASU
Associate Director
Integration
Erik Fisher
Associate Director
Anticipation
Cynthia Selin
Associate Director
Outreach
Jameson Wetmore
Assistant Director, Education
Ira Bennett
Post-Doctoral Scholars
Michael Reinsborough
Kathryn Vignone
Rider Foley
Board of Visitors
(Multi-sector)
Program Manager
Deron Ash
Program Coordinator,
Communications
Jennifer Banks
Program Coordinator,
Events and Administration
Michelle Iafrat
Graduate Research Assistants
Student Interns
RTTA 1: Research &
Innovation Systems
Jan Youtie, GA Tech
Philip Shapira, GA Tech
Jose Lobo, ASU
RTTA 2: Public Opinion & Values
Dietram Scheufele, UW-Madison
Elizabeth Corley, ASU
RTTA 3: Anticipation &
Deliberation
Cynthia Selin, ASU
Kelly Rawlings, ASU
RTTA 4: Reflexivity &
Integration
Erik Fisher, ASU
Elizabeth Corley, ASU
TRC 1: Equity & Responsibility
Susan Cozzens, GA Tech
Jameson Wetmore, ASU
TRC 2: Urban Design, Materials & the
Built Environment
Arnim Wiek, ASU
Sander van der Leeuw, ASU

Table 4A: NSEC Personnel, Irrespective of Citizenship

				Citizenship Status											
				U.S. Citizen or Permanent Resident											
		Gender		Race					Mixed-incl.	Mixed					
Personnel Type	Total	Male	Female	NA	PI	AA	C	A	NA,PI,AA	C,A	Not Provided	Other Non-US	*Ethnicity Hispanic	Disabled	% NSEC Dollars
Director	1	1					1								0%
Team Leaders	12	7	5	0	0	0	11						1		50%
Staff	5	2	3				5								75%
Collaborators	207	123	84	0	1	1	186	19					7	0	0%
Research															
Post Docs	15	6	8	0	0	0	11	4					1	0	50%
Doc/Mas. Students	83	43	40	0	0	1	66	16					9	0	50%
Undergraduate Students	22	15	7	0	1	1	17	3					4	0	100%
Curriculum Development and Outreach															
Senior Faculty															
Junior Faculty															
Research Staff															
Visiting Faculty															
Industry Researchers															
Post Docs															
Doctoral Students															
Masters Students															
Undergraduate Students															
REU Student, if applicable															
NSF REU Program															
NSF/NSEC Program REU															
NSEC's Own REU															
Other Visiting College Students															
Pre-college (K-12)															
Students															
Teachers - RET															
Teachers - non-RET															
TOTALS	**345**	**197**	**147**	**0**	**2**	**3**	**297**	**42**				**0**	**22**	**0**	

Table 4B: NSEC Personnel, U.S. Citizen or Permanent Resident

		Gender		Race					Mixed-incl.	Mixed					
Personnel Type	Total	Male	Female	NA	PI	AA	C	A	NA,PI,AA	C,A	Not Provided	Other Non-US	*Ethnicity Hispanic	Disabled	% NSEC Dollars
Director	1	1					1								0%
Team Leaders	7	3	4				7								50%
Staff	5	2	3				3								75%
Collaborators	160	85	74				154	6					2		0%
Research															
Post Docs	5	3	2				5								50%
Doc/Mas. Students	58	27	31		1	2	54	1					4		50%
Undergraduate Students	22	15	7		1	2	16	3					4		100%
Curriculum Development and Outreach															
Senior Faculty															
Junior Faculty															
Research Staff															
Visiting Faculty															
Industry Researchers															
Post Docs															
Doctoral Students															
Masters Students															
Undergraduate Students															
REU Student, if applicable															
NSF REU Program															
NSF/NSEC Program REU															
NSEC's Own REU															
Other Visiting College Students															
Pre-college (K-12)															
Students															
Teachers - RET															
Teachers - non-RET															
Totals	**258**	**136**	**121**	**0**	**2**	**4**	**240**	**10**	**0**			**0**	**10**	**0**	

14. Publications, Patents and Press

Primary NSEC support indicated by (‡) symbol. Partial NSEC support for all others.

Faculty level participants indicated in boldface.

Books

1. **Allenby, Braden** and **Daniel Sarewitz**. 2011. *The Techno-Human Condition*. Cambridge, MA: MIT Press.

2. **Campbell, Heather E.** and **Elizabeth A. Corley**. 2012. *Urban Environmental Policy Analysis: Toward Sustainability*. Armonk, NY: M. E. Sharpe, Inc.

3. ‡**Cozzens, Susan** and **Jameson Wetmore** (eds.). 2011. *Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality, and Development*. New York: Springer.

4. ‡De Ridder-Vignone, Kathryn, **Clark A. Miller** and **Daniel Barben**, ed(s). In review. 2014. *Yearbook of Nanotechnology in Society, Volume IV: Nanotechnology and Democracy*. New York: Springer.

5. **Fiedeler, Ulrich**, Christopher Coenen, Sarah R. Davies and **Arianna Ferrari**. 2010. *Understanding Nanotechnology: Philosophy, Policy and Publics*. Amsterdam: IOS Press.

6. ‡**Fisher, Erik, Cynthia Selin** an**d Jameson Wetmore** (eds.). 2008. *Yearbook of Nanotechnology in Society, Volume I: Presenting Futures*. New York: Springer.

7. **Gorman, Michael E.** (ed.). 2010. *Trading Zones and Interactional Expertise: Creating New Kinds of Collaboration*. Cambridge, MA: MIT Press.

8. ‡**Guston, David H.** (ed.). 2010. *Encyclopedia of Nanoscience and Society*. Thousand Oaks, CA: Sage Publications.

9. ‡**Hays, Sean A.**, **Jason S. Robert**, **Clark A. Miller** and **Ira Bennett** (ed.). 2013. *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*. New York: Springer.

10. **Smits, Ruud**, **Stefan Kuhlmann** and **Philip Shapira** (eds.). 2010. *The Theory and Practice of Innovation Policy: An International Research Handbook.* Cheltenham, UK: Edward Elgar.

11. **Wetmore, Jameson** and **Deborah G. Johnson** (eds.). 2009. *Technology and Society: Building our Sociotechnical Future*. Cambridge, MA: MIT Press.

Book Chapters

1. ‡Anderson, Derrick. 2013. "The Cochlear Implant Controversy: Lessons Learned for Using Anticipatory Governance to Address Societal Concerns of Nano-scale Neural interface

Technologies." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 147-158. New York: Springer.

2. ‡Anderson, Ashley A., **Dominique E. Brossard, Dietram A. Scheufele** and **Michael A. Xenos**. 2012. "Online Talk: How Exposure to Disagreement in Online Comments Affects Beliefs in the Promise of Controversial Science." *Citizen Voices: Performing Pubic Participation in Science and Environments Communication*, ed(s). Louise Phillips, Anabela Carvalho and Julie Doyle, p. 119-135. Chicago, IL: Intellect.

3. ‡Bal, Ravtosh. 2011. "Public Perceptions of Fairness in NBIC Technologies." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Jameson Wetmore and Susan Cozzens, p. 231-250. New York: Springer.

4. ‡**Barben, Daniel**, **Erik Fisher**, **Cynthia Selin** and **David H. Guston**. 2008. "Anticipatory Governance of Nanotechnology: Foresight, Engagement, and Integration." *The Handbook of Science and Technology Studies, Third Edition*, ed(s). Edward J. Hackett, Olga Amsterdamska, Michael Lynch and Judy Wajcman, p. 979-1000. Cambridge, MA: MIT Press.

5. ‡Bennett, Ira**.** 2008. "Developing Plausible Nano-Enabled Products." *Yearbook of Nanotechnology in Society, Volume I: Presenting Futures*, ed(s). Erik Fisher, Cynthia Selin and Jameson Wetmore, p. 149-156. New York: Springer.

6. **Boardman, Craig**, **Catherine Slade** and **Barry Bozeman**. 2012. "A Retrospective of the U.S. National Nanotechnology Initiative (NNI): Lessons Learned for Coordination of Federal Scientific and Technical Work at the Nanoscale." *Making it to the Forefront: Nanotechnology-A Developing Country Perspective*, ed(s). N. A. Duda, p. 139-160. New York: Springer.

7. ‡Choi, Doo-Hun, Anthony D. Dudo and **Dietram A. Scheufele**. 2013. "U.S. News Coverage of Neuroscience Nanotechnology: How U.S. Newspapers Have Covered Neuroscience Nanotechnology During the Last Decade." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 67-78. New York: Springer.

8. ‡**Cobb, Michael D**. 2012. "Deliberative Fears: Citizen Deliberation about Science in a National Technology Forum." *Public Engagement and Emerging Technologies*, ed(s). Kieran O'Doherty and Edna Einsiedel, p. 115-132. Vancouver, Canada: University of British Columbia Press.

9. ‡**Cobb, Michael D.** 2012. "Lessons Learned from the First National Citizens' Technology Conference." *Nanotechnology and the Public: Risk Perception and Risk Communication*, ed(s). Susanna Hornig Priest, p. 93-103. Boca Raton, FL: CRC Press.

10. Cortes Lobos, Rodrigo. 2012. "Nanotecnologa en Chile, Qu tan preparado se encuentra el pas para desarrollar esta disciplina." *Perspectivas sobre el desarrollo de las nanotecnologas en America Latina*, ed(s). Guillermo Foladori, Edgar Zayago Lau and Noela Invernizzi, p. 85-101. Mexico City, Mexico: Miguel Angel Porrua.

11. ‡**Cozzens, Susan**. 2012. "The Distinctive Dynamics of Nanotechnology in Developing Nations." *Making it to the Forefront: Nanotechnology-A Developing Country Perspective*, ed(s). N. A. Duda, p. 125-138. New York: Springer.

12. ‡**Cozzens, Susan**. 2011. "Building Equity and Equality into Nanotechnology." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. 433-457. New York: Springer.

13. ‡**Cozzens, Susan** and **Jameson Wetmore**. 2011. "Introduction." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. vii-ix. New York: Springer.

14. ‡Davies, Sarah R. 2011. "Of insects and armies." *Lemistry: A Celebration of the Work of Stanislaw Lem*, ed(s). Ra Page and Magda Raczynska, p. 271-276. Manchester, UK: Comma Press, Co-commissioned by the Polish Cultural Institute in London with support from the Polish Book Institute.

15. ‡Davies, Sarah R. 2010. "The Exhibition and Beyond: New and Controversial Science in the Museum." *Science Exhibitions: Curation and Design*, ed(s). A. Filippoupoliti and G. Farnell, MuseumsEtc.

16. Ellwood, Paul, **Erik Fisher** and Kristo Panzda. 2013. "Organizational Life Cycles for Responsible Innovation." *Emerging Technologies: Socio-Behavioral Life Cycle Approaches*, ed(s). Michael Gorman, Nora Savage and Anita Street, p. 117-138. Singapore: Pan Stanford.

17. ‡**Fisher, Erik.** 2009. "Legislative and Regulatory Framework." *Nanotechnology and FDA-Regulated Products: The Essential Guide*, Washington, DC: Food and Drug Law Library.

18. ‡**Fisher, Erik.** 2007. "The Convergence of Nanotechnology, Policy, and Ethics." *Advances in Computers 71: Nanotechnology*, ed(s). M. Zelkowitz, p. 274-296. London: Academic Press.

19. ‡**Fisher, Erik** and **Arie Rip**. 2013. "Responsible Innovation: Multi-Level Dynamics and Soft Interventions." *Responsible Innovation*, ed(s). R. Owen, M. Heintz and J. Bessant, p. 165-183. Chichester, UK: Wiley.

20. ‡**Fisher, Erik**, **Carl Mitcham** and **Roop Mahajan**. 2010-2011. "Jì shù de zhōng yóu tiǎo jìe: cóng nèi bù jìn xíng zhì lǐ." *Research Yearbook on Philosophy of Technology in China*, ed(s). Zhu Qin and Li Yili, 7:182-196.

21. ‡**Fisher, Erik** and **Clark A. Miller**. 2009. "Contextualizing the Engineering Laboratory." *Engineering in Context*, ed(s). S.H. Christensen, M. Meganck and B. Delahousse, p. 369-381. Palo Alto, CA: Academica Press.

22. ‡**Fisher, Erik** and **Daan Schuurbiers**. 2013. "Socio-technical Integration Research: Collaborative Inquiry at the Midstream of Research and Development." *Opening up the Laboratory: Approaches for Early Engagement with New Technology*, ed(s). I. van de Poel, M.E. Gorman, N. Doorn and D. Schuurbiers, 16:97-110. Wiley-Blackwell.

23. **Fisher, Erik** and David Beltran-del-Rio. 2012. "Mathematics and Root Interdisciplinarity." *Oxford Handbook of Interdisciplinarity*, ed(s). Robert Frodeman, Julie Thompson Klein and Carl Mitcham, p. 88. New York: Oxford University Press.

24. ‡**Fisher, Erik** and **Roop L. Mahajan**. 2010. "Embedding the Humanities in Engineering: Art, Dialogue, and a Laboratory." *Creating New Kinds of Collaboration: Trading Zones and Interactional Expertise*, ed(s). M.E. Gorman and R. Evans, p. 209-230. Cambridge, MA: MIT Press.

25. ‡Foley, Rider W., **Arnim Wiek**, and **Braden Kay**. In review. In review. 2014. "Nanotechnology Development as if People and Places Matter." *Yearbook of Nanotechnology in Society, Volume IV: Nanotechnology and Democracy*, ed(s). Kathryn De Ridder-Vignone, Clark A. Miller and Daniel Barben, New York: Springer.

26. ‡**Fujimura, Joan H.** 2010. "Technobiological Imaginaries: How Do We Know Nature?" *The Politics of Divergent (Interdisciplinary) Framings of Nature and Evolving Ecologies*, ed(s). Mara Goldman, Matthew Turner and Paul Nadasdy, Durham, NC: Duke University Press.

27. ‡Gallo, Jason. 2009. "Doing Archival Research: How to Find a Needle in a Haystack." *Research Confidential: Solutions to Problems Most Social Scientists Pretend They Never Have*, ed(s). E. Hargittai, p. 262-286. Ann Arbor, MI: University of Michigan Press.

28. ‡Gatchair, Sonia. 2011. "Potential Implications for Equity in the Nanotechnology Workforce in the U.S." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, New York: Springer.

29. ‡**Gorman, Michael**, Antonio Calleja-Lopez, Shanon Conley and **Farzad Mahootian**. 2013. "Integrating Ethicists and Social Scientists into Cutting Edge Research and Technological Development." *Early Engagement and New Technologies: Opening up the Laboratory*, ed(s). I. van de Poel, N. Doorn, D. Schuurbiers and M. E. Gorman, 16:157-173. Wiley-Blackwell.

30. Guo, Ying, Tingting Ma and **Alan L. Porter**. 2012. "Innovation Risk Path Assessing for a Newly Emerging Science and Technology: Illustrated for Dye-Sensitized Solar Cells." *Disruptive Technologies, Innovation and Global Redesign: Emerging Implications*, ed(s). Ndubuisi Ekekwe and Nazrul Islam, p. 12-26. Hershey, PA: IGI Global.

31. ‡**Guston, David H.** 2013. "Daddy, Can I Have a Puddle Gator?: Creativity, Anticipation, and Responsible Innovation." *Responsible Innovation: Managing the Responsible Emergence of Science and Innovation in Society*, ed(s). Richard Owen, John Bessant and Maggy Heintz, p. 109-118. Chichester, UK: John Wiley & Sons, Ltd.

32. **‡Guston, David H.** 2007. "The Center for Nanotechnology in Society at Arizona State University and the Prospects for Anticipatory Governance." *Nanoscale: Issues and Perspectives for the Nano Century*, ed(s). N. Cameron and M.E. Mitchell, p. 377-392. New York: John Wiley and Sons.

33. **Guston, David H.** 2007. "Toward Centres for Responsible Innovation in the Commercialized University." *Public Science in Liberal Democracy: The Challenge to Science and Democracy*, ed(s). P.W.B. Phillips and J. Porter, p. 295-312. Toronto, Canada: University of Toronto Press.

34. ‡**Guston, David H.**, John Parsi and Justin Tosi. 2007. "Anticipating the Political and Ethical Challenges of Human Nanotechnologies." *Nanoethics: The Ethical and Social Implications of Nanotechnology*, ed(s). Fritz Allhoff, Patrick Lin, James Moor and John Weckert, p. 185-197. New York: John Wiley and Sons.

35. ‡**Hamlett, Patrick**, **Michael D. Cobb** and **David H. Guston**. 2013. "National Citizens Technology Forum: Nanotechnologies and Human Enhancement." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 265-283. New York: Springer.

36. ‡**Harsh, Matthew**. 2012. "Informal Governance of Emerging Technologies: Non-Governmental Organizations and Nanotechnology in Africa." *International Handbook on Informal Governance*, ed(s). Thomas Christiansen and Christine Neuhold, p. 481-500. Cheltenham, UK: Edward Elgar.

37. ‡Harsh, Matthew. 2011. "Equity and Participation in Decisions: What can Nanotechnology Learn from Biotechnology in Kenya." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. 251-269. New York: Springer.

38. ‡**Hays, Sean A.** 2013. "Narratives of Intelligence: The Sociotechnical Context of Cognitive Enhancement in American Political Culture." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 219-234. New York: Springer.

39. ‡**Hays, Sean A.**, **Clark A. Miller** and **Michael D. Cobb**. 2013. "Public Attitudes towards Nanotechnology-Enabled Cognitive Enhancement in the United States." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 43-65. New York: Springer.

40. **Hogle, Linda F.** 2008. "Emerging Medical Technologies." *The Handbook of Science and Technology Studies, Third Edition*, ed(s). Edward J. Hackett, Olga Amsterdamska, Michael Lynch and Judy Wajcman, p. 841-874. Cambridge, MA: MIT Press.

41. **Johnson, Deborah G.** and **Jameson Wetmore**. 2008. "STS and Ethics: Implications for Engineering Ethics." *The Handbook of Science and Technology Studies, Third Edition*, ed(s). Edward J. Hackett, Olga Amsterdamska, Michael Lynch and Judy Wajcman, p. 567-582. Cambridge, MA: MIT Press.

42. ‡Karinen, Risto and **David H. Guston**. 2010. "Toward Anticipatory Governance: The Experience with Nanotechnology." *Governing Future Technologies: Nanotechnology and the Rise of an Assessment Regime*, ed(s). M. Kaiser, M. Kurath, S. Maasen and C. Rehmann-Sutter, p. 217-232. Dordrecht, The Netherlands: Springer.

43. ‡Kay, Luciano and **Jan Youtie**. 2013. "Corporate Strategies in Emerging Technologies: The Case of Chinese Firms and Energy Storage-Related Nanotechnology Applications." *Shaping Emerging Technologies: Governance, Innovation, Discourse*, p. 167-184. Berlin, Germany: IOS Press / AKA.

44. ‡Kay, Luciano and **Philip Shapira**. 2011. "The Potential of Nanotechnology for Equitable Economic Development: The Case of Brazil." *The Yearbook of Nanotechnology in Society, Volume II:*

Nanotechnology and the Challenges of Equity, Equality and Development, ed(s). Susan Cozzens and Jameson Wetmore, New York: Springer.

45. ‡Keiper, Adam. 2013. "The Age of Neuroelectronics." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 115-146. New York: Springer.

46. ‡**Loosemore, Richard P.W.** 2013. "The Complex Cognitive Systems Manifesto." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 195-217. New York: Springer.

47. ‡Macnaghten, Phil, **Sarah Davies** and Matthew Kearnes. 2010. "Narrative and Public Engagement: Some Findings from the DEEPEN Project." *Understanding Public Debate on Nanotechnologies: Options for Framing Public Policies*, ed(s). Rene von Schomberg and Sarah R. Davies, p. 13-30. Brussels: European Commission.

48. **Marchant, Gary E.** and **Douglas J. Sylvester**. 2007. "Nanotechnology Regulation: The United States Approach." *New Global Frontiers in Regulation: The Age of Nanotechnology*, ed(s). Graeme A. Hodge, Diana M. Bowman and Karinne Ludlow, p. 189-211. Cheltenham, UK: Edward Elgar.

49. ‡Meng, Yu and **Philip Shapira**. 2011. "Female Involvement in Nanotechnology Patenting: Does It make a Difference." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, New York: Springer.

50. ‡Milford, Richard and **Jameson Wetmore**. 2013. "A New Model for Public Engagement: The Dialogue on Nanotechnology and Religion." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 97-111. New York: Springer.

51. ‡**Miller, Clark A.** 2009. "NSE and Society." *The Big Ideas of Nanoscale Science and Engineering: A Guidebook for Secondary Teachers*, ed(s). Shawn Y. Stevens, LeeAnn Sutherland and Joseph S. Krajcik, p. 65-72. Arlington, VA: National Science Teachers Association Press.

52. ‡**Miller, Clark A.** 2009. "Science, Technology, and Society." *The Big Ideas of Nanoscale Science and Engineering: A Guidebook for Secondary Teachers*, ed(s). Shawn Y. Stevens, LeeAnn Sutherland and Joseph S. Krajcik, p. 160-170. National Science Teachers Association Press.

53. ‡**Miller, Clark A.** and **Sarah K. Pfatteicher**. 2007. "Nanotechnology in Society Education: Cultivating the Mental Habits of Social Engineers and Critical Citizens." *Nanoscale Science and Engineering Education*, ed(s). Aldrin E. Sweeney and Sudipta Seal, p. 567-576. Stevenson Ranch, CA: American Scientific Publishers.

54. ‡Milleson, Valerye. 2013. "Nanotechnology, the Brain, and the Futures: Ethical Considerations." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 79-96. New York: Springer.

55. ‡Naufel, Stephanie. 2013. "Nanotechnology, the Brain, and Personal Identity." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 167-178. New York: Springer.

56. ‡Nulle, Christina, **Clark A. Miller**, **Alan L. Porter** and Harmeet Singh Gandhi. 2013. "Applications of Nanotechnology to the Brain and Central Nervous System." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 21-41. New York: Springer.

57. **Nydal, Rune**, **Stacey Efstathiou** and **Astrid Laegreid**. 2012. "Crossover Research: Exploring a Collaborative Mode of Integration." *Little By Little: Expansions of Nanoscience and Emerging Technologies*, ed(s). H. van Lente, C. Coenen, T. Fleischer, K. Konrad, L. Krabbenborg, C. Milburn, et al, p. 181-194, part 14. Amsterdam, The Netherlands: IOS Press.

58. **Owen, Richard**, **Phil Macnaghten**, **Jack Stilgoe**, **Michael Gorman**, **Erik Fisher** and **David H. Guston**. 2013. "A Framework for Responsible Innovation." *Responsible Innovation: Concepts and Practice*, ed(s). R. Owen, J. Bessant and M. Heintz, p. 27-50. Chichester, UK: Wiley.

59. ‡Phelps, Robin and **Erik Fisher**. 2011. "Legislating the Laboratory? Promotion and Precaution in a Nanomaterials Company." *Biomedical Nanotechnology*, ed(s). Sarah J. J. Hurst, 726(2):339-358. Zurich, Switzerland: Humana Press.

60. **Randles, Sally**, **Jan Youtie**, **David H. Guston**, **Barbara Harthorn**, **Chris Newfield**, **Philip Shapira**, et al. 2012. "A Trans-Atlantic Conversation on Responsible Innovation and Responsible Governance." *Little by Little: Expansions of Nanoscience and Emerging Technologies*, ed(s). H. Van Lente, C. Coenen, T. Fleischer and K. Konrad, p. 169-180. Heidelberg: Akademische Verlagsgesellschaft.

61. ‡**Robert, Jason S.** 2009. "Nanoscience, Nanoscientists, and Controversy." *Nanotechnology and Society: Current and Emerging Ethical Issues,* ed(s). F. Allhoff and P. Lin, p. 225-239. New York: Springer.

62. ‡**Robert, Jason S.**, **Clark A. Miller** and Valerye Milleson. 2013. "Introduction: Ethics and Anticipatory Governance of Nano-Neurotechnological Convergence." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 1-17. New York: Springer.

63. ‡**Roco, Mihail**, **Barbara Harthorn**, **David H. Guston** and **Philip Shapira**. 2011. "Innovative and Responsible Governance of Nanotechnology for Societal Development." *WTEC Panel Report on Nanotechnology Research Directions to 2020: Retrospective and Outlook*, ed(s). Mihail C. Roco, Chad A. Mirkin and Mark C. Hersam, p. 441-488. New York: Springer.

64. ‡Rodriguez, Hannot, Hu Mingyan and **Erik Fisher**. 2012. "Socio-Technical Integration in International Research Policy: The situation in the European Union, the United States, and China." *Engineering and Development in American, Chinese and European Contexts*, ed(s). S. Christensen, C. Mitcham, B. Li and Y. An, p. 291-304. Dordrecht, Germany: Springer.

65. ‡**Sarewitz, Daniel**. 2011. "Anticipatory Governance of Emerging Technologies." *The Growing Gap Between Emerging Technologies and Legal-Ethical Oversight: The Pacing Problem*, ed(s). Gary Marchant, Braden Allenby and Joseph Herkert, p. 95-106. Dortrecht, Germany: Springer.

66. ‡**Sarewitz, Daniel** and **David H. Guston**. 2008. "Commentary: Public Engagement as Scientific Responsibility." *Nanotechnology: Ethics and Society*, ed(s). Deb Bennett-Woods, p. 32-35. New York: CRC Press.

67. ‡**Scheufele, Dietram A.** 2011. "Perspective: Public Attitudes toward Nanotechnology." *Nanotechnology: Public Perception and Risk Communication*, ed(s). Susanna Hornig Priest, p. 71-78. New York: CRC Press.

68. ‡**Scheufele, Dietram A.** 2006. "Messages and Heuristics: How Audiences Form Attitudes About Emerging Technologies." *Engaging Science: Thoughts, Deeds, Analysis and Action*, ed(s). J. Turney, p. 20-25. London, UK: The Wellcome Trust.

69. ‡**Scheufele, Dietram A.** and Anthony D. Dudo. 2010. "Emerging Agendas at the Intersection of Political and Science Communication: Communication About Nanotechnololgy." *Communication Yearbook 34*, ed(s). C. Salmon, p. 143-166. Newbury Park, CA: Sage.

70. Schuurbiers, Daan. 2010. "Social Responsibility in Research Practice - Engaging applied scientists with the socio-ethical context of their work." *Simon Stevin Series in Ethics of Technology*, 6. Technical University of Delft.

71. ‡**Selin, Cynthia**. In review. 2014. "Finding Futures: Experiments with Experiential Future-Oriented Dialogue." *Communicating For Social Change: A Handbook For Researchers*, ed(s). Pereira, A. and Wakeford, T.

72. ‡**Selin, Cynthia**. 2011. "Travails, Travels, and Trials: Report from the SNET Roundtable on Plausibility." *Quantum Engagements: Social Reflections of Nanoscience and Emerging Technologies*, ed(s). Torben B. Zulsdorf, Christopher Coenen, Ulrich Fiedeler and et al, p. 235-240. Heidelberg, Germany: IOS Press.

73. ‡**Selin, Cynthia**. 2007. "Professional Dreamers: The Past in the Future of Scenario Planning." *Scenarios for Success: Turning Insight into Action*, ed(s). Bill Sharpe and Kees van der Heijden, p. 27-52. London, UK: John Wiley and Sons.

74. ‡**Sharan, Raghubir**, **Yashowanta N. Mohapatra** and **Jameson Wetmore.** 2011. "Technical Education and Indian Society: The Role of Values." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. 393-406. New York: Springer.

75. ‡Silverman, Arielle. 2013. "Healing the blind: Perspectives of Blind Persons on Methods to Restore Sight." *Yearbook of Nanotechnology in Society, Volume III: Nanotechnology, the Brain, and the Future*, ed(s). Sean A. Hays, Jason S. Robert, Clark A. Miller and Ira Bennett, p. 159-166. New York: Springer.

76. ‡**Slade, Catherine**. 2011. "Exploring Societal Impact of Nanomedicine using Pulic Value Mapping." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. 69-88. New York: Springer.

77. ‡**Smits, Ruud**, Rutger van Merkerk, **David H. Guston** and **Daniel Sarewitz**. 2010. "The Role of Technology Assessment in Systemic Innovation Policy." *The Theory and Practice of Innovation Policy*, ed(s). Ruud E. Smits, Stefan Kuhlmann and Philip Shapira, p. 387-416. Cheltenham, UK: Edward Elgar Publishing Ltd.

78. ‡Subramanian, Vrishali, Thomas Woodson and **Susan Cozzens**. 2012. "Nanotechnology in India: Inferring Links between Emerging Technologies and Development." *Making it to the Forefront: Nanotechnology-A Developing Country Perspective*, ed(s). N. A. Duda, p. 109-124. New York: Springer.

79. ‡Valdivia, Walter. 2011. "Innovation, Growth, and Inequality: Plausible Scenarios of Wage Disparities in a World with Nanotechnologies." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. 145-164. New York: Springer.

80. **van der Leeuw, Sander**. 2010. "The Archaeology of Innovation: Lessons for our Times." *Innovation: Perspectives for the 21st Century*, ed(s). Frank Moss and Todd and et al Machover, p. 33-56. Madrid, Spain: BBVA.

81. Wender, Benjamin A. and **Thomas P. Seager**. In press. "Anticipatory Life Cycle Assessment of SWCNT-enabled Lithium Ion Batteries." *Nanotechnology for Sustainable Manufacturing*, ed(s). David Rickerby, Springer.

82. ‡**Wetmore, Jameson**. 2012. "Aider les Scientifiques et le Public a Reflechir aux Implications d'Ensemble des Nanotechnologies (Etats-Unis)." *La Science et le Debat Public*, ed(s). Institute des Hautes Etudes pour la Science et la Technologie, p. 279-293. Paris, France: Actes Sud.

83. ‡**Wicksen, Fern**, **Michael D. Cobb** and **Patrick Hamlett**. In review. "Review of deliberative processes: National Citizens Technology Forum - USA." *Democratisation of Science and Technology Development: Deliberative Processes in the Development of Nanotechnologies*, ed(s). S. Pal, G. Scholl and S. Eivind, Singapore: Pan Stanford Publishing.

84. ‡**Wolbring, Gregor**. 2011. "Ableism and Favoritism for Abilities Governance, Ethics and Studies: New Tools for Nanoscale and Nanoscale Enabled Science and Technology Governance." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. 89-104. New York: Springer.

85. **Wolbring, Gregor.** 2008. "The Unenhanced Underclass." *Building Everyday Democracy*, ed(s). P. Miller and J. Wilsdon, p. 122-128. London: Demos.

86. ‡**Youtie, Jan**, **Alan L. Porter**, **Kevin Boyack**, **Jose Lobo**, **Richard Klavans**, **Ismael Rafols**, et al. 2012. "Using Large-scale Databases to Understand the Trajectories of Emerging Technologies." *Little*

by Little: Expansions of Nanoscience and Emerging Technologies, ed(s). H. Van Lente, C. Coenen, T. Fleischer, K. Konrad, et al, p. 55-58. Heidelberg: Akademische Verlagsgesellschaft

87. ‡**Youtie, Jan** and **Philip Shapira**. 2011. "Metropolitan Development of Nanotechnology: Concentration or Dispersion." *The Yearbook of Nanotechnology in Society, Volume II: Nanotechnology and the Challenges of Equity, Equality and Development*, ed(s). Susan Cozzens and Jameson Wetmore, p. 165-180. New York: Springer.

Peer Review Journal Article

1. **Abbott, Kenneth W.**, **Elizabeth A. Corley** and **Gary E. Marchant**. 2012. "Soft Law Oversight Mechanisms for Nanotechnology." *Jurimetrics: The Journal of Law, Science and Technology*. 52(3):279-312.

2. **Abbott, Kenneth W.**, **Gary E. Marchant** and **Douglas J. Sylvester**. 2006. "A Framework Convention for Nanotechnology." *Environmental Law Reporter*. 36:10931-10942.

3. Alencar, Maria Simone de M., **Alan L. Porter** and Adelaide Maria de Souza Antunes. 2007. "Nanopatenting Patterns in Relation to Product Life Cycle." *Technological Forecasting & Social Change*. 74(9):1661-1680.

4. Alencar, Maria Simone de M., Adelaide Maria de Souza Antunes and **Alan L. Porter**. 2007. "Patents on Nano and the Life Cycle & Value Chain Analysis of Related Products." *China Intellectual Property*. p. 865-866.

5. ‡Anderson, Ashley A., Amy B. Becker, **Michael A. Xenos**, **Dominique E. Brossard** and Dietram **A. Scheufele**. In review. "The Role of Cognition and Anticipated Opinion Climate in Discussion of Nanotechnology." *Science Communication*.

6. ‡Anderson, Ashley A., **Dietram A. Scheufele**, **Dominique E. Brossard** and **Elizabeth A. Corley**. 2012. "The Role of Media and Deference to Scientific Authority in Cultivating Trust in Sources of Information about Nanotechnology." *International Journal of Public Opinion Research*, 24(2): 225-237.

7. ‡Anderson, Ashley A., **Dominique E. Brossard and Dietram A. Scheufele**. 2013. "Nanoparticle-related Deaths: Science News and the Issue Intention Cycle in Print and Online Media." *Politics and the Life Sciences*. 31(1-2):87-96.

8. ‡Anderson, Ashley A., **Dominique E. Brossard** and **Dietram A. Scheufele**. 2012. "News Coverage of Controversial Emerging Technologies." *Politics and the Life Science*. 31(1-2):87-96. doi: 10.2990/31_1-2_87

9. ‡Anderson, Ashley A., **Dominique E. Brossard** and **Dietram A. Scheufele**. 2010. "The Changing Information Environment for Nanotechnology: Online Audiences and Content." *Journal of Nanoparticle Research*. 12(4):1083-1094. doi: 10.1007/s11051-010-9860-2

10. ‡Anderson, Ashley A., **Dominique E. Brossard**, **Dietram A. Scheufele**, **Michael A. Xenos** and Peter Ladwig. 2013. "The “Nasty Effect”: Online Incivility and Risk Perceptions of Emerging Technologies." *Journal of Computer-Mediated Communication*. doi: 10.1111/jcc4.12009

11. ‡Anderson, Ashley A., **Dominique E. Brossard**, **Dietram A. Scheufele**, **Michael A. Xenos** and Sara K. Yeo. In review. "Toxic Talk? How Online Incivility can Undermine Perceptions of Media." *Mass Communication and Society*.

12. ‡Anderson, Ashley A., **Jason Delborne** and Daniel L. Kleinman. 2012. "Information Beyond the Forum: Motivations, Strategies, and Impacts of Citizen Participants Seeking Information during a Consensus Conference." *Public Understanding of Science*. doi: 10.1177/0963662512447173

13. ‡Anderson, Ashley A., Jiyoun Kim, **Dietram A. Scheufele**, **Dominique E. Brossard** and **Michael A. Xenos**. 2013. "What’s in a name? How we define nanotech shapes public reactions." *Journal of Nanoparticle Research*. 15(2):1-5. doi: 10.1007/s11051-013-1421-z

14. ‡**Anderson, Derrick** and **Catherine P. Slade**. 2013. "Agenda Setting in Emergent R&D Policy Subsystems: Examining Discourse Effects of the 21st Century Nanotechnology Research and Development Act." *Review of Policy Research*. 30(5):447-463. doi: http://dx.doi.org/10.1111/ropr.12033

15. ‡Arora, Sanjay, **Alan L. Porter**, **Jan Youtie** and **Philip Shapira**. 2013. "Capturing Developments in an Emerging Technology: an Updated Search Strategy for Identifying Nanotechnology Research Outputs." *Scientometrics*. 95(1):351-370. doi: 10.1007/s11192-012-0903-6

16. ‡Arora, Sanjay, **Jan Youtie**, **Philip Shapira**, Lidan Gao and Tingting Ma. 2013. "Entry Strategies in an Emerging Technology: a Pilot Web-based Study of Graphene Firms." *Scientometrics*. 95(3):1189-1207.

17. ‡Arora, Sanjay K., **Jan Youtie**, Stephen Carley, **Alan L. Porter** and **Philip Shapira**. 2014. "Measuring the Development of a Common Scientific Lexicon in Nanotechnology." *Journal of Nanoparticle Research*. 16(1):1-11.

18. ‡Arora, Sanjay, Rider W. Foley, **Jan Youtie**, **Philip Shapira** and **Arnim Wiek**. 2014. "Drivers of Technology Adoption: Nanomaterials in Building Construction." *Technological Forecasting and Social Change*. doi: http://dx.doi.org/10.1016/j.techfore.2013.12.017

19. ‡**Barben, Daniel**. 2010. "Analyzing Acceptance Politics: Towards an Epistemological Shift in the Public Understanding of Science and Technology." *Public Understanding of Science*. 19(3):274-292.

20. **Barben, Daniel**. 2007. "Changing Regimes of Science and Politics: Comparative and Transnational Perspectives for a World in Transition." *Science and Public Policy*. 33(11):55-69.

21. ‡Bennett, Ira and **Daniel Sarewitz**. 2006. "Too Little, Too Late? Research Policies on the Societal Implications of Nanotechnology in the United States." *Science as Culture*. 15(4):309-325.

22. ‡Bernstein, Michael J., Rider W. Foley and **Ira Bennett**. In review. "An Operationalized Post-normal Science Framework for assisting in the Development of Complex Science-policy Solutions: The Case of Nanotechnology Governance." *Journal of Nanoparticle Research*.

23. ‡Berube, D. M., C. C. Cummings, Michael A. Cacciatore, **Dietram A. Scheufele** and J. Kalin. 2011. "Characteristics and Classification of Nanoparticles: Expert Delphi Survey." *Nanotoxicology*. 5(2):236-243.

24. ‡Binder, Andrew R., Michael A. Cacciatore, **Dietram A. Scheufele**, Bret R. Shaw and **Elizabeth A. Corley**. 2012. "Measuring Risk/Benefit Perceptions of Emerging Technologies and their Potential Impact on Communication of Public Opinion toward Science." *Public Understanding of Science*, 21(7): 830-847.

25. **Bozeman, Barry** and **Daniel Sarewitz**. 2011. "Public Value Mapping and Science Policy Evaluation." *Minerva*. 49(1):1-23.

26. ‡**Brossard, Dominique E.** and **Dietram A. Scheufele**. 2013. "Science, New Media, and the Public." *Science*. 339(40):40-41. doi: 10.1126/science.1232329

27. ‡**Brossard, Dominique E.**, **Dietram A. Scheufele**, Eunkyung Kim and **Bruce V. Lewenstein**. 2008. "Religiosity as a Perceptual Filter: Examining Processes of Opinion Formation about Nanotechnology." *Public Understanding of Science*. 18(5):546-558. doi: 10.1177/0963662507087304

28. **Brown, Mark**. and **David H. Guston**. 2009. "Science, Democracy, and the Right to Research." *Science and Engineering Ethics*. 15(3):351-366.

29. ‡Cacciatore, Michael A., Ashley A. Anderson, Doo-Hun Choi, **Dominique E. Brossard**, **Dietram A. Scheufele**, Xuan Liang, et al. 2012. "Coverage of Emerging Technologies: A Comparison Between Print and Online Media." *New Media and Society*. 14(6):1039-1059. doi: 10.1177/1461444812439061

30. ‡Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. In review. 2014. "Another (Methodological) Look at Knowledge Gaps and the Internet's Potential for Closing Them." *Public Understanding of Science*. doi: 10.1177/0963662512447606

31. ‡Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. 2011. "From Enabling Technology to Applications: The Evolution of Risk Perceptions about Nanotechnology." *Public Understanding of Science*. 20(3):385-404. doi: 10.1177/0963662509347815

32. ‡Cacciatore, Michael A., Sara K. Yeo, **Dietram A. Scheufele**, **Michael A. Xenos**, Doo-Hun Choi, **Dominique E. Brossard** and **Elizabeth A. Corley**. In review. 2014. "Misperceptions in Polarized Politics: The Role of Knowledge, Religiosity and Media." *PS: Political Science and Politics*.

33. ‡Calleja Lopez, Antonio. December December 2009. "Ciencia, tecnología e integracion social: el proyecto STIR (Socio-Technical Integration Research)." *Argumentos de Razón Técnica*. 12:157-165.

34. ‡**Calvert, Jane** and **Joan H. Fujimura**. 2009. "Calculating Life? A Sociological Perspective on Systems Biology." *European Molecular Biology Organization EMBO Reports*. 10:S46-S49.

35. **Canary, Heather E.**, Julie L. Taylor, **Joseph R. Herkert**, **Karin Ellison**, **Jameson M. Wetmore** and Carlos A. Tarin. In review. 2014. "Engaging Students in Integrated Ethics Education: A Communication in the Disciplines Study of Pedagogy and Students Roles in Society." *Communication Education*.

36. ‡Carley, Stephen and **Alan L. Porter**. 2012. "A Forward Diversity Index." *Scientometrics*. 90(2):407-427. doi: 10.1007/s11192-011-0528-1

37. ‡Carley, Stephen and **Alan L. Porter**. 2011. "Measuring the Influence of Nanotechnology Environmental Health & Safety Research." *Research Evaluation*. 20(5):389-395.

38. ‡**Cobb, Michael.** 2011. "Creating Informed Public Opinion: Citizen Deliberation about Nanotechnologies for Human Enhancements." *Journal of Nanoparticle Research*. 13(4):1533-1548. doi: 10.1007/s11051-011-0227-0

39. ‡**Cobb, Michael D.** and Gretchen Gano. In review. "Empowerment and Social Learning: Long Term Benefits of Citizen Deliberation about Nanotechnologies for Human Enhancement." *Public Understanding of Science*.

40. ‡**Cobb, Michael D.** and Gretchen Gano. 2012. "Evaluating Structured Deliberations about Emerging Technologies: What About Participant Evaluation." *International Journal of Emerging Technologies and Society*. 10:96-110.

41. ‡Conley, Shannon. 2011. "Engagement Agents in the Making: On the Front Lines of Socio-Technical Integration [Commentary]." *Science and Engineering Ethics*. 17(4):715-721. doi: 10.1007/s11948-011-9323-x

42. ‡**Corley, Elizabeth A.**, **Dietram A. Scheufele** and Qian Hu. 2009. "Of Risks and Regulations: How Leading U.S. Nano-Scientists Form Policy Stances about Nanotechnology." *Journal of Nanoparticle Research*. 11(7):1573-1585.

43. ‡**Corley, Elizabeth A.**, Younjae Kim and **Dietram A. Scheufele**. 2013. "The Current Status and Future Direction of Nanotechnology Regulations: A View from Nano-Scientists." *Review of Policy Research*. 30(5):487-509. doi: http://dx.doi.org/10.1111/ropr.12036

44. ‡**Corley, Elizabeth A.**, Youngjae Kim and **Dietram A. Scheufele**. 2012. "Public Challenges of Nanotechnology Regulation." *Jurimetrics: The Journal of Law, Science and Technology*. 52(3):371-381.

45. ‡**Corley, Elizabeth A.**, Youngjae Kim and **Dietram A. Scheufele**. 2011. "Leading U.S. Nano-Scientists' Perceptions about Nano Media Coverage and the Public Communication of Scientific Research Findings." *Journal of Nanoparticle Research*. 13(12):7041-7055. doi: 10.1007/s11051-011-0617-3

46. ‡Cortes Lobos, Rodrigo. 2012. "Georgia Manufacturing Industry: Key Factors of Exchange of Knowledge with External Sources." *International Journal of Learning and Intellectual Capital*. 9(4):380-391. doi: 10.1504/IJLIC.2012.049615

47. ‡**Cozzens, Susan**, Rodrigo Cortes Lobos, Ogundiran Soumonni and Thomas Woodson. 2013. "Nanotechnology and the Millennium Development Goals: Water, Energy, and Agrifood." *Journal of Nanoparticle Research*. 15(2013):1-14.

48. **Dandara, Collet**, **Clement Adebamowo**, Jantina de Vries, Edward S. Dove, **Erik Fisher**, **Richard A. Gibbs**, et al. 2012. "An Idea whose Time Has Come? An African Foresight Observatory on Genomics Medicine and Data-Intensive Global Science." *Current Pharmacogenomics and Personalized Medicine*. 10(1):7-15.

49. ‡Davies, Sarah R**.** 2010. "How We Talk when We Talk about Nano: The Future in Laypeoples Talk." *Futures*. 43(3):317-326. doi: 10.1016/j.futures.2010.07.003

50. ‡Davies, Sarah R. and **Cynthia Selin**. 2012. "Energy Futures: Five Dilemmas of the Practice of Anticipatory Governance." *Environmental Communication*. 6(1):119-136. doi: 10.1080/17524032.2011.644632

51. ‡Davies, Sarah R., **Cynthia Selin**, Carlo Altamirano Allende, Michael Burnam-Fink, Corinne DiVittorio, Cecilie Glerup and et al. In press. "Studying Emerge: Findings from an Event Ethnography." *Futures*.

52. ‡Davies, Sarah R., **Cynthia Selin**, Gretchen Gano and **Angela Pereira**. 2013. "Finding Futures: A Spatio-Visual Experiment in Participatory Engagement." *Leonardo: The International Society for the Arts, Sciences and Technology*. 46(1):76-77. doi: 10.1162/LEON_a_00489

53. ‡Davies, Sarah R., **Cynthia Selin**, Gretchen Gano and **Angela Pereira**. 2012. "Citizen Engagement and Urban Change: Three Case Studies of Material Deliberation." *Cities*. 29(6):351-357. doi: 10.1016/j.cities.2011.11.012

54. ‡Davies, Sarah R. and **Phil Magnaghten**. 2010. "Narratives of Mastery and Resistance: Lay Ethics of Nanotechnology." *NanoEthics*. 4(2):141-151. doi: 10.1007/s11569-010-0096-5

55. **Davis, Robert W.** 2012. "A Computer-aided Affective Content Analysis of Nanotechnology Newspaper Articles." *NanoEthics*. 5:319-334. doi: 10.1007/s11569-011-0129-8

56. ‡**Delborne, Jason A.**, Ashley A. Anderson, **Daniel L. Kleinman**, **Mathilde Colin** and **Maria Powell**. 2011. "Virtual Deliberation? Prospects and Challenges for Integrating the Internet in Concensus Conferences." *Public Understanding of Science*. 20(3):367-384. doi: 10.1177/0963662509347138

57. ‡de Ridder-Vignone, Kathryn 2012. "Images and Imaginations: An Exploration of Nanotechnology Image Galleries." *Leonardo*. 45(5):447-454. doi: 10.1162/LEON_a_00442

58. ‡de Ridder-Vignone, Kathryn. 2012. "Public Engagement and the Art of Nanotechnology." *Leonardo*. 45(5):433-438. doi: 10.1162/LEON_a_00440

59. ‡de Ridder-Vignone, Kathryn. 2012. "The Images and Art of Nanotechnologies." *Leonardo*. 45(5):431-432. doi: 10.1162/LEON_a_00439

60. ‡Dudo, Anthony D., Doo-Hun Choi and **Dietram A. Scheufele.** 2011. "Food Nanotechnology in the News. Coverage Patterns and Thematic Emphases during the Last Decade." *Appetite*. 56(1):78-89.

61. ‡Dudo, Anthony D., **Sharon Dunwoody** and **Dietram A. Scheufele.** 2011. "The Emergence of Nano News: Tracking Thematic Trends and Changes in U.S. Newspaper Coverage of Nanotechnology." *Journalism & Mass Communication Quarterly*. 88(1):55-75.

62. **Feldman, Martha S.**, **Anne M. Khademian**, **Helen Ingram** and **Anne S. Schneider**. 2006. "Ways of Knowing and Inclusive Management Practices." *Public Administration Review*. 66:89-99.

63. ‡**Fernandez-Ribas, Andrea**. 2010. "International Patent Strategies of Small and Large Firms: An Empirical Study of Nanotechnology." *Review of Policy Research*. 27(4):457-473.

64. ‡**Fernandez-Ribas, Andrea** and **Philip Shapira**. 2009. "Technological Diversity, Scientific Excellence and the Location of Inventive Activities Abroad: The Case of Nanotechnology." *Journal of Technology Transfer*. 34(3):286-303.

65. ‡**Fischhoff, Baruch** and **Dietram A. Scheufele**. 2013. "The Science of Science Communication." *Proceedings of the National Academy of Sciences*. 110:14031-14032.

66. ‡**Fisher, Erik**. 2007. "Ethnographic Invention: Probing the Capacity of Laboratory Decisions." *NanoEthics*. 1(2):155-165.

67. ‡**Fisher, Erik**, **Catherine Slade**, Derrick Anderson and **Barry Bozeman**. 2011. "The Public Value of Nanotechnology." *Scientometrics*. 85(1):29-39.

68. ‡**Fisher, Erik**, **Marianne Boenink**, **Simone van der Burg** and **Neal Woodbury**. 2012. "Responsible Healthcare Innovation: Anticipatory Governance of Nanodiagnostics for Theranostics Medicine." *Expert Review of Molecular Diagnostics*. 12(8):857-870.

69. ‡**Fisher, Erik** and **Michael Lightner**. 2009. "Entering the Social Experiment: A Case for the Informed Consent of Graduate Engineering Students." *Social Epistemology*. 23(4-Mar):283-300.

70. ‡Fisher, Erik and **Roop L. Mahajan**. 2006. "Nanotechnology Legislation: Contradictory Intent? U.S. Federal Legislation on Integrating Societal Concerns into Nanotechnology Research and Development." *Science and Public Policy*. 33(1):5-16.

71. ‡Fisher, Erik, **Roop L. Mahajan** and **Carl Mitcham**. 2006. "Midstream Modulation of Technology: Governance from Within." *Bulletin of Science, Technology and Society*. 26(6):485-496. doi: 10.1177/0270467606295402

72. ‡**Flipse, Steven M.**, **Maarten C.A. van der Sanden** and **Patricia Osseweijer**. 2013. "Improving Industrial R&D Practices with Social and Ethical Aspects: Aligning Key Performance Indicators with Social and Ethical Aspects in Food Technology R&D." *Technological Forecasting and Social Change*. doi: http://dx.doi.org/10.1016/j.techfore.2013.08.009

73. **Flipse, Steven M.**, **Maarten C.A. van der Sanden** and **Patricia Osseweijer**. 2012. "Midstream Modulation in Biotechnology Industry: Redefining what is 'Part of the Job' of Researchers in Industry." *Science and Engineering Ethics*. doi: 10.1007/s11948-012-9411-6

74. ‡Foley, Rider W. and **Arnim Wiek**. In review. "Scenarios of Nanotechnology Innovation vis-à-vis Sustainability Challenges." *Futures*.

75. ‡Foley, Rider W. and **Arnim Wiek**. 2013. "Patterns of Nanotechnology Innovation and Governance within a Metropolitan Area." *Technology in Science*. 35(4):233-247.

76. ‡Foley, Rider W. and Hsiang-Kai Dennis Dong. In review. "Greener Grass and Path Dependent Careers: Perceptions of the Business Sector by Public and Non-Profit Employees." *The American Review of Public Administration*.

77. ‡Foley, Rider W., **Ira Bennett** and **Jameson Wetmore**. 2012. "Practitioners Views on Responsibility: Applying Nanoethics." *NanoEthics*. 6(3):231-241. doi: 10.1007/s11569-012-0154-2

78. ‡**Fujimura, Joan H.** and Ramya Rajagopalan. February 2011. "Different Differences: The Use of 'Genetic Ancestry' Versus Race in Biomedical Human Genetic Research." *Social Studies of Science*. 41(1):5-30. doi: 10.1177/0306312710379170

79. ‡Gallo, Jason. 2009. "The Discursive and Operational Foundations of the National Nanotechnology Initiative in the History of the National Science Foundation." *Perspectives on Science*. 17(2):174-211.

80. Gao, L., **Alan L. Porter**, Jue Wang, S. Fang, X. Zhang, Tingting Ma, et al. 2013. "Technology Life Cycle Analysis Modeling Based on Patent Documents." *Technological Forecasting and Social Change*. 80(3):398-407. doi: 10.1016/j.techfore.2012.10.003

81. **Gaughan, Monica** and **Elizabeth A. Corley**. 2010. "Science Faculty at U.S. Research Universities: The Impacts of University Research Center Affiliation and Gender on Industrial Activities." *Technovation*. 30(3):215-222.

82. ‡**Graham, Stuart** and **Maurizio Iacopetta**. 2009. "Nanotechnology and the Emergence of a General Purpose Technology." *Les Annales d'Economie et de Statistique*.

83. Guo, Ying, Chen Xu, Lu Huang and **Alan L. Porter**. 2012. "Empirically Informing a Technology Delivery System Model for an Emerging Technology: Illustrated for Dye-Sensitized Solar Cells." *R & D Management*. 42(2):133-149. doi: 10.1111/j.1467-9310.2012.00674.x

84. ‡Guo, Ying, Lu Huang and **Alan L. Porter**. 2010. "Research Profiling: Nano-enhanced, Thin-film Solar Cells." *R and D Management*. 40(2):195-208.

85. ‡**Guston, David H.** 2014. "Understanding 'Anticipatory Governance'." *Social Studies of Science*. 44(2):219-243.

86. ‡**Guston, David H.** 2014. "Building the Capacity for Public Engagement with Science in the United States." *Public Understanding of Science*. 23:53-59.

87. ‡**Guston, David H.** 2012. "The Pumpkin or the Tiger? Michael Polanyi, Frederick Soddy, and Anticipating Emerging Technologies." *Minerva*. 50(3):363-379. doi: 10.1007/s11024-012-9204-8

88. ‡**Guston, David H.** 2010. "The Anticipatory Governance of Emerging Technologies." *Journal of the Korean Vacuum Society*. 19(6):432-441.

89. ‡**Harsh, Matthew** and Thomas Woodson. 2012. "Pro-Poor Nanotechnology Applications for Water: Characterizing Private Sector Research." *Nanotechnology, Law & Business*. 9(3):232-252.

90. Heinze, Thomas, **Philip Shapira**, **Juan D. Rogers** and **Jacqueline M. Senker**. 2009. "Organizational and Institutional Influences on Creativity in Scientific Research." *Research Policy*. 38(4):610-623.

91. ‡**Ho, Shirley S.**, **Dietram A. Scheufele** and **Elizabeth A. Corley**. 2013. "Factors Influencing Public Risk-Benefit Perceptions of Nanotechnology: Assessing the Effects of Mass Media, Interpersonal Communication, and Elaborative Processing." *Public Understanding of Science*. 22(5):606-623. doi: 10.1177/0963662511417936

92. ‡**Ho, Shirley S.,** Dietram **A. Scheufele** and **Elizabeth A. Corley**. 2011. "Value Predispositions, Mass Media, and Attitudes Toward Nanotechnology: The Interplay of Public and Experts." *Science Communication*. 33(2):167-200. doi: 10.1177/1075547010380386

93. ‡**Ho, Shirley S.**, **Dietram A. Scheufele** and **Elizabeth A. Corley**. 2010. "Making Sense of Policy Choices: Understanding the Roles of Value Predispositions, Mass Media, and Cognitive Processing in Public Attitudes Toward Nanotechnology." *Journal of Nanoparticle Research*. 12(8):2703-2715. doi: 10.1007/s11051-010-0038-8

94. **Hogle, Linda F.** 2009. "Science, Ethics, and the “Problems” of Governing Nanotechnologies." *The Journal of Law, Medicine & Ethics*. 37(4):749-758. doi: http://dx.doi.org/10.1111/j.1748-720X.2009.00445.x

95. ‡**Hogle, Linda F.** 2006. "Enhancement Technologies and the Body." *Annual Reviews of Anthropology and Neuroscience*. 34:695-716.

96. **Horst, Maja**. December 2011. "Taking Our Own Medicine: On an Experiment in Science Communication." *Science and Engineering Ethics*. 17(4):801-815. doi: 10.1007/s11948-011-9306-y

97. Hu, Guangyuan, Stephen Carley and Li Tang. 2012. "Visualizing Nanotechnology Research in Canada: Evidence from Publication Activities, 1990-2009." *Journal of Technology Transfer*. 37(4):550-562. doi: 10.1007/s10961-011-9238-3

98. ‡Huang, Lu, Ying Guo, **Alan L. Porter**, **Jan Youtie** and **Douglas K. R. Robinson**. 2012. "Visualizing Potential Innovation Pathways in a Workshop Setting: The Case of Nano-Enabled Biosensors." *Technology Analysis and Strategic Management*. 24(5):527-542.

99. ‡Huang, Lu, Zhengchun Peng, Ying Guo and **Alan L. Porter**. 2011. "Characterizing a Technology Development at the Stage of Early Emerging Applications: Nanomaterial-enhanced Biosensors." *Technology Analysis and Strategic Management*. 23(5):527-544.

100. ‡Huang, Lu, Zhengchun Peng, Ying Guo and **Alan L. Porter**. 2010. "Identifying the Emerging Roles of Nanoparticles in Biosensors." *Journal of Business Chemistry*. 7(1):15-30.

101. ‡Huang, Wan-Ling, **Eric Welch** and **Elizabeth A. Corley**. In review. 2014. "Public Sector Voluntary Initiatives: The Adoption of the Environmental Management System by Public Waste Water Treatment Facilities in the United States." *Journal of Environmental Planning and Management*.

102. ‡**Invernizzi, Noela** and Sarah R. Davies. 2012. "Editorial: Special Issue." *Nanotechnology Law & Business*. 9(3):196-200.

103. **Jenkins, Lekelia D.**, **Sara M. Maxwell** and **Erik Fisher**. 2012. "Increasing Conservation Impact and Policy Relevance of Research through Embedded Experiences." *Conservation Biology*. 26(4):740-742. doi: 10.1111/j.1523-1739.2012.01878.x

104. ‡Kay, Luciano, **Jan Youtie** and **Philip Shapira**. 2013. "Signs of Things to Come? What Patent Submissions by Small and Medium-sized Enterprises say about Corporate Strategies in Emerging Technologies." *Technological Forecasting and Social Change*. doi: http://dx.doi.org/10.1016/j.techfore.2013.09.006

105. ‡Kay, Luciano, **Nils Newman**, **Jan Youtie**, **Alan L. Porter** and **Ismael Rafols** 2013. "Patent Overlay Mapping: Visualizing Technological Distance." *Journal of the American Society for Information Science and Technology*.

106. ‡Kay, Luciano and **Philip Shapira**. 2009. "Developing Nanotechnology in Latin America." *Journal of Nanoparticle Research*. 11(2):259-278.

107. ‡Kim, Eun-Sung. 2008. "Directed Evolution: A Historical Exploration into an Evolutionary Experimental System of Nanobiotechnology, 1965-2006." *Minerva*. 46(4):463-484.

108. ‡Kim, Jiyoun, Sara K. Yeo, **Dominique E. Brossard**, **Dietram A. Scheufele** and **Michael A. Xenos**. In review. "Disentangling the Influence of Value Predispositions and Risk/Benefit Perceptions on Support for Nanotechnology among the American Public." *Risk Analysis*. doi: http://dx.doi.org/10.1111/risa.12141

109. ‡Kim, Youngjae, **Elizabeth A. Corley** and **Dietram A. Scheufele**. 2012. "Classifying U.S. Nano Scientists Of Cautious Innovators, Regulators, and Technology Optimists." *Science and Public Policy*. 39(1):30-38. doi: 10.3152/030234212X13113405157822

110. **Klaine, Stephen J**., **Albert A. Koelsmans**, Nina Horne, Stephen Carley, **Richard D. Handy**, Larry Kapustka, et al. 2012. "Paradigms to Assess the Environmental Impact of Manufactured Nanomaterials." *Environmental Toxicology and Chemistry*. 31(1):3-14. doi: 10.1002/etc.733

111. ‡**Kleinman, Daniel L.**, **Jason A. Delborn**e and Ashley A. Anderson. 2009. "Engaging Citizens: The High Cost of Citizen Participation in High Technology." *Public Understanding of Science*. 1:1-20.

112. **Klochikhin, Evgeny A.** and **Philip Shapira**. 2012. "Engineering Small Worlds in a Big Society: Assessing the Early Impacts of Nanotechnology in China." *Review of Policy Research*. 29(6):752-775. doi: 10.1111/j.1541-1338.2012.00596.x

113. Ladwig, Peter, **Kajsa E. Dalrymple**, **Dominique E. Brossard**, **Dietram A. Scheufele** and **Elizabeth A. Corley**. 2012. "Perceived Familiarity or Factual Knowledge? Comparing Operationalizations of Scientific Understanding." *Science and Public Policy*. 39(6):761-774. doi: 10.1093/scipol/scs048

114. Laurent, Brice. December 2011. "Technologies of Democracy: Experiments and Demonstrations." *Science and Engineering Ethics*. 17(4):649-666. doi: 10.1007/s11948-011-9303-1

115. ‡Laurent, Brice. 2007. "Diverging Convergences." *Innovation: The European Journal of Social Science Research*. 20(4):343-357. doi: 10.1080/13511610701760804

116. Lee, Chul-joo and **Dietram A. Scheufele**. 2006. "The Influence of Knowledge and Deference toward Scientific Authority: A Media Effects Model for Public Attitudes toward Nanotechnology." *Journalism & Mass Communication Quarterly*. 83(4):819-834.

117. **Leech, Beth**. 2011. "Nano-solutions or Macro-problems? A Public Values Analysis of the Application of Nanotechnology to Water Purification." *American Society of Mechanical Engineering (ASME) 2011 Congress Proceedings*.

118. ‡**Leung, Ricky C.** February 2013. "Networks as sponges: International collaboration for developing nanomedicine in China." *Research Policy*. 42(1):211-219. doi: 10.1016/j.respol.2012.05.001

119. ‡Leung, Ricky. 2007. "Network Position, Research Funding and Interdisciplinary Collaboration among Nanotechnology Scientists: An Application of Social Network Analysis." *Solid State Phenomena*. 121-123:1347-1350. doi: 10.4028/www.scientific.net/SSP.121-123.1347

120. Leydesdorff, Loet, Stephen Carley and Ismael Rafols. 2013. "Global Maps of Science based on the new Web-of-Science Categories." *Scientometrics*. 94(2):589-593. doi: 10.1007/s11192-012-0784-8

121. ‡Li, Nan, **Ashley A. Anderson**, **Dominique E. Brossard** and **Dietram A. Scheufele**. In review. "Channeling Science Information Seekers' attention? A Content Analysis of Top-Ranked vs. Lower-Ranked Sites in Google." *Journal of Computer-Mediated Communication*.

122. ‡Liang, Xuan, Leona Yi-Fan Su, Sara K. Yeo, **Dietram A. Scheufele**, **Dominique E. Brossard**, **Michael A. Xenos** and **Elizabeth A. Corley**. In review. 2014. "Building Buzz: (Scientists) Communicating Science in New Media Environments." *Journalism & Mass Communication Quarterly*.

123. ‡Liang, Xuan, Shirley S. Ho, **Dominique E. Brossard**, **Dietram A. Scheufele** and **Michael A. Xenos**, X. Hao, et al. In review. "Value Predispositions as Perceptual Filters: a Cross-Cultural Comparison of Public Attitudes toward Nanotechnology in the United States and Singapore." *Public Understanding of Science*.

124. ‡Ma, TingTing, **Alan L. Porter**, Ying Guo, Jud Ready, Chen Xu and Lidan Gao. 2013. "A Technology Opportunities Analysis Model: Applied to Dye-Sensitized Solar Cells for China." *Technology Analysis and Strategic Management*. 26(1):87-104. doi: http://dx.doi.org/10.1080/09537325.2013.850155

125. **Marchant, Gary E.** and **Douglas J. Sylvester**. 2006. "Transnational Models for Regulation of Nanotechnology." *Journal of Law, Medicine, and Ethics*. 34(4):714-725.

126. ‡**McGregor, Joan** and **Jameson Wetmore**. 2009. "Researching and Teaching the Ethics of Social Implications of Emerging Technologies in the Laboratory." *NanoEthics*. 3(1):17-30.

127. Meng, Yu, **Philip Shapira** and Li Tang. 2013. "The Emergence of Science-Driven Entrepreneurship in China: A Case Study of Technological Innovation in Nano-Pigment Inks." *International Journal of Entrepreneurship and Innovation Management*. 17(1/2/3):162-176.

128. ‡**Miller, Clark A.** and Ira Bennett. 2008. "Thinking Longer Term about Technology: Is there Value in Science Fiction-inspired Approaches to Constructing Future." *Science and Public Policy*. 35(8):597-606.

129. **Mohr, Alison.** December 2011. "Publics in the Making: Mediating Different Methods of Engagement and the Publics These Construct Commentary on: Technologies of Democracy: Experiments and Demonstrations." *Science and Engineering Ethics*. 17(4):667-672. doi: 10.1007/s11948-011-9305-z

130. Molin, Mans J. and **Cynthia Selin**. In review. "Institutionalizing Innovation: Instances of Changes in the Danish System of Innovation." *Research Policy*.

131. ‡**Monahan, Torin** and Tyler Wall. 2007. "Somatic Surveillance: Corporeal Control through Information Networks." *Surveillance and Society*. 4(4-Mar).

132. Neff, Mark and **Elizabeth A. Corley**. 2009. "35 Years and 160,000 Articles: A Bibliometric Exploration of the Evolution of Ecology." *Scientometrics*. 80(3):657-682.

133. ‡Ostman, Rae, Brad Herring, Ali Jackson, **Ira Bennett** and **Jameson Wetmore**. 2013. "Making Meaning Through Conversations about Science and Society." *Exhibitionist*. p. 42-47.

134. **Ozdemir, Vural**, **Erik Fisher**, **Edward S. Dove**, Hilary Burton, Galen E.B. Wright, **Mario Massellis**, et al. 2012. "End of the Beginning and Public Health Pharmacogenomics: Knowledge in Mode 2 and P5 Medicine." *Current Pharmacogenomics and Personalized Medicine*. 10(1):1-6.

135. ‡Panzda, Krsto and Paul Ellwood. 2013. "Strategic and Ethical Foundations for Responsible Innovation." *Research Policy*. 42(5):1112-1125. doi: 10.1016/j.respol.2013.02.007

136. Patel, Anil and **Cynthia Selin**. Review and resubmit. "Scenario Planning at the U.S. Army Corp of Engineers: a Public Sector Case Study." *Long Range Planning*.

137. ‡Pei, R. and **Alan L. Porter.** 2011. "Profiling Leading Scientists in Nano-Biomedical Science: Interdisciplinarity and Potential Leading Indicators of Research Directions." *R&D Management*. 41(3):288-306.

138. ‡Pei, R., **Jan Youtie** and **Alan L. Porter**. 2012. "Nano-Biomedical Science in China: Growth and Challenges." *Technology Analysis and Strategic Management*. 24(3):69-88.

139. ‡Philbrick, Mark and Javiera Barandiaran. 2009. "The National Citizens Technology Forum: Lessons for the Future." *Science and Public Policy*. 36(5):335-347.

140. **Porter, Alan L.** and **Ismael Rafols**. 2009. "Is Science Becoming more Interdisciplinary? Measuring and Mapping Six Research Fields over Time." *Scientometrics*. 81(3):719-745.

141. ‡**Porter, Alan L.** and **Jan Youtie**. 2009. "How Interdisciplinary is Nanotechnology." *Journal of Nanoparticle Research*. 11(5):1023-1041.

142. ‡**Porter, Alan L.** and **Jan Youtie**. 2009. "Where does Nanotechnology belong in the Map of Science?" *Nature Nanotechnology*. 4:534-536.

143. ‡**Porter, Alan L.**, **Jan Youtie**, **Philip Shapira** and David J. Schoeneck. 2008. "Refining Search Terms for Nanotechnology." *Journal of Nanoparticle Research*. 10:715-728. doi: 10.1007/s11051-007-9266-y

144. ‡**Porter, Alan L.**, **Ying Guo** and Denise Chiavetta. 2011. "Tech Mining: Text Mining and Visualization Tools, as Applied to Nano-enhanced Solar Cells." *Wiley Interdisciplinary Reviews: Data Mining and Knowledge*. 1(2):172-181. doi: 10.1002/widm.7

145. ‡**Powell, Maria**, **Jason A. Delborne** and Mathilde Colin. 2011. "Beyond Engagement Exercises: Exploring the US National Citizens Technology Forum from the Bottom-Up." *Journal of Public Deliberation*. 7(1):article 4.

146. ‡**Powell, Maria**, Mathilde Colin, **Daniel L. Kleinman**, **Jason A. Delborne** and Ashley A. Anderson. 2011. "Imagining Ordinary Citizens? Conceptualized and Actual Participants for Deliberations on Emerging Technologies." *Science as a Culture*. 30(1):37-70.

147. **Rafols, Ismael**, **Alan L. Porter** and **Loet Leydesdorff**. 2010. "Science Overlay Maps: A New Tool for Research Policy and Library Management." *Journal of the American Society for Information Science and Technology*. 61(9):1871-1887. doi: 10.1002/asi.21368

148. ‡Ramirez, R. and **Cynthia Selin**. 2014. "Plausibility and Probability in Scenario Planning." *Foresight*. 16(1):54-74.

149. **Robinson, Douglas K. R.**, Lu Huang, Ying Guo and **Alan L. Porter**. 2013. "Forecasting Innovation Pathways for New Emerging Science and Technologies." *Technological Forecasting and Social Change*. 80(2):267-285. doi: 10.1016/j.techfore.2011.06.004

150. ‡ Rodríguez, Hannot, **Erik Fisher** and Daan Schuurbiers. 2013. "Integrating Science and Society in European Framework Programmes: Trends in Project-level Solicitations." *Research Policy*. 42(5):1126-1137. doi: 10.1016/j.respol.2013.02.006

151. ‡**Rogers, Juan D.** 2010. "Citation Analysis of Nanotechnology at the Field Level: Implications of R and D Evaluation." *Research Evaluation*. 19(4):281-290.

152. ‡**Rogers, Juan D.**, **Jan Youtie** and **Luciano Kay**. 2012. "Program-level Assessment of Research Centers: Contribution of Nanoscale Science and Engineering Centers to US Nanotechnology National Initiative Goals." *Research Evaluation*. 21(5):368-380. doi: 10.1093/reseval/rvs028

153. ‡Runge, Kristin K., Sarah K. Yeo, Michael A. Cacciatore, **Dietram A. Scheufele**, **Dominique E. Brossard**, Michael A. Xenos, et al. 2013. "Tweeting Nano: How Public Discourses about Nanotechnology Develop in Social Media Environments." *Journal of Nanoparticle Research*. 15:1381. doi: 10.1007/s11051-012-1381-8

154. **Sabharwal, Meghna** and **Elizabeth A. Corley**. 2009. "Faculty Job Satisfaction across Gender and Discipline." *Social Science Journal*. 46:539-556.

155. ‡**Scheufele, Dietram A.** 2013. "Communicating Science in Social Settings." *Proceedings of the National Academy of Sciences*. 110:14040-14047. doi: http://dx.doi.org/10.1073/pnas.1213275110

156. ‡**Scheufele, Dietram A.**, **Elizabeth A. Corley**, **Sharon Dunwoody**, Tsung-Jen Shih, Elliott D. Hillback and **David H. Guston**. 2007. "Nanotechnology Scientists Worry about Some Risks More than the General Public." *Nature Nanotechnology*. 2(12):732-734.

157. ‡**Scheufele, Dietram A.**, **Elizabeth A. Corley**, Tsung-Jen Shih, Kajsa E. Dalrymple and Shirley S. Ho. 2008. "Religious Beliefs and Public Attitudes toward Nanotechnology in Europe and the United States." *Nature Nanotechnology*. 4(2):91-94.

158. Schuurbiers, Daan. 2011. "What Happens in the Lab: Applying Midstream Modulation to Enhance Critical Reflection in the Laboratory?" *Science and Engineering Ethics*. 17(4):769-788. doi: 10.1007/s11948-011-9317-8

159. ‡Schuurbiers, Daan and **Erik Fisher**. 2009. "Lab-scale intervention." *EMBO Reports. Science & Society Series on Convergence Research*. 10(5):424-427.

160. Schuurbiers, Daan, **Patricia Osseweijer** and **Julian Kinderlerer**. 2009. "Implementing The Netherlands Code of Conduct for Scientific Practice A Case Study." *Science and Engineering Ethics*. 15(2):213-231.

161. ‡**Seager, Thomas**, **Evan Selinger** and **Arnim Wiek**. 2012. "Sustainable Engineering Science for Resolving Wicked Problems." *Journal of Agricultural and Environmental Ethics*. 25(4):467-484. doi: http://dx.doi.org/10.1007/s10806-011-9342-2

162. ‡**Selin, Cynthia**. In review. "Diagnosing Futures: Producing Scenarios to Support Reflexive Governance of Technology." *Social Studies of Science, special issue.*

163. ‡**Selin, Cynthia**. 2011. "Negotiating Plausibility: Intervening in the Future of Nanotechnology." *Science and Engineering Ethics*. 17(4):723-737. doi: 10.1007/s11948-011-9315-x

164. ‡**Selin, Cynthia**. 2008. "The Sociology of the Future: Tracing Stories of Technology and Time." *Sociology Compass*. 2(60):1875-1895.

165. ‡**Selin, Cynthia**. 2007. "Expectations and the Emergence of Nanotechnology." *Science, Technology and Human Values*. 32(2):196-220. doi: 10.1177/0162243906296918

166. ‡**Selin, Cynthia**. 2006. "Time Matters: Temporal Harmony and Dissonance in Nanotechnology Networks." *Time and Society*. 15(1):121-139.

167. ‡Selin, Cynthia. 2006. "Trust and the Illusive Force of Scenarios." *Futures*. 38(1):1-14.

168. ‡**Selin, Cynthia** and **Prasad Boradkar**. 2010. "Prototyping Nanotechnology: A Pedagogic Approach to Responsible Innovation." *Journal of Nanotechnology Education*. 2(1-2):1-12. doi: 10.1166/jne.2010.1002

169. ‡**Selin, Cynthia** and Rebecca Hudson. 2010. "Envisioning nanotechnology: New media and future-oriented stakeholder dialogue." *Technology in Society*. 32(3):173-182.

170. ‡**Shapira, Philip** and **Jan Youtie**. 2008. "Emergence of Nanodistricts in the United States: Path Dependence or New Opportunities." *Economic Development Quarterly*. 22(3):187-199.

171. ‡**Shapira, Philip** and **Jan Youtie**. 2011. "Introduction to the Symposium Issue: Nanotechnology Innovation and PolicyCurrent Strategies and Future Trajectories." *Journal of Technology Transfer*. 36(6):581-586. doi: 10.1007/s10961-011-9224-9

172. ‡**Shapira, Philip**, **Jan Youtie** and **Alan L. Porter**. 2010. "The Emergence of Social Science Research in Nanotechnology." *Scientometrics*. 85(2):595-611.

173. ‡**Shapira, Philip**, **Jan Youtie** and Luciano Kay. 2011. "National Innovation Systems and the Globalization of Nanotechnology Innovation." *Journal of Technology Transfer*. 36(6):604. doi: 10.1007/s10961-011-9212-0

174. ‡**Shapira, Philip**, **Jan Youtie** and Sanjay Arora. 2012. "Early Patterns of Commercial Activity in Graphene." *Journal of Nanoparticle Research*. 4(4):811-826. doi: 10.1007/s11051-012-0811-y

175. ‡**Shapira, Philip**, **Jan Youtie** and Stephen Carley. 2014. "Prototypes of Emerging Metropolitan Nanodistricts in the United States and Europe." *Les Annales d'Economie et de Statistique*.

176. ‡**Shapira, Philip** and Ju Wang. June 1, 2009. "From Lab to Market? Strategies and Issues in the Commercialization of Nanotechnology in China." *Journal of Asian Business Management*. 8(4):461-489.

177. ‡Shelley-Egan, Clare and Sarah R. Davies. 2013. "Nano-Industry Operationalizations of “Responsibility”: Charting Diversity in the Enactment of Responsibility." *Review of Policy Research*. 30(5):588-604. doi: http://dx.doi.org/10.1111/ropr.12032

178. ‡Shih, Tsung-Jen, **Dietram A. Scheufele** and **Dominique E. Brossard**. 2013. "Disagreement and Value Predispositions: Understanding Public Opinion abolut Stem Cell Research." *International Journal of Public Opinion Research*. doi: http://dx.doi.org/10.1093/ijpor/eds029

179. ‡**Slade, Catherine.** 2011. "Public Value Mapping of Equity in Emerging Nanomedicine." *Minerva*. 49(1):71-86. doi: 10.1007/s11024-011-9163-5

180. **Strumsky, Deborah**, **Jose Lobo** and **Sander van der Leeuw**. 2012. "Using Patent Technology Codes to Study Technological Change." *Economics of Innovation and New Technology*. 21(3):267-286. doi: 10.1080/10438599.2011.578709

181. ‡Su, Leona Yi-Fan, **Heather E. Akin**, **Dominique E. Brossard**, Ashley A. Anderson and **Dietram A. Scheufele**. In review. "Science Audience Tectonics: News Consumption Pattern and it's Implication for Public Understanding of Science." *Journalism and Mass Communication Quarterly*.

182. ‡Su, Leona Yi-Fan, **Michael A. Cacciatore**, **Dietram A. Scheufele**, **Dominique E. Brossard** and **Michael A. Xenos**. In review. "Inequalities in Scientific Understanding: Connecting Traditional Media, Science Blog Attention and Interpersonal Discussion with Factual and Perceived Knowledge Gaps." *Mass Communication and Society*.

183. ‡Su, Leona Yi-Fan, **Michael A. Cacciatore**, **Dietram A. Scheufele**, **Dominique A. Brossard** and **Michael A. Xenos**. In review. "Inequalities in Scientific Understanding: Differentiating between Factual and Perceived Knowledge Gaps." *Science Communication*.

184. ‡Subramanian, Vrishali, **Jan Youtie**, **Alan L. Porter** and **Philip Shapira**. 2010. "Is There a Shift to Active Nanostructures." *Journal of Nanoparticle Research*. 12(1):1-10.

185. ‡**Tahan, Charles**, Ricky Leung, Greta M. Zenner, **K. D. Ellison**, **Wendy C. Crone** and **Clark A. Miller**. 2006. "Nanotechnology and Society: A Discussion-Based Undergraduate Course." *American Journal of Physics*. 74(5):443-448.

186. ‡Tang, Li and **Alan L. Porter**. 2011. "Charting Nano Environmental Health and Safety Research Trajectories: Is China Convergent with the United States." *Journal of Science Policy & Governance*. 1(1):1-16.

187. ‡Tang, Li and **John P. Walsh**. 2010. "Bibliometric Fingerprints: Name Disambiguation Based on Approximate Structure Equivalence of Cognitive Maps." *Scientometrics*. 84(3):763-784. doi: 10.1007/s11192-010-0196-6

188. ‡Tang, Li and **Philip Shapira**. 2012. "Effects of International Collaboration and Knowledge Moderation on Chinas Nanotechnology Research Impacts." *Journal of Technology Management in China*. 7(1):94-110.

189. ‡Tang, Li and **Philip Shapira**. 2011. "Regional Development and Interregional Collaboration in the Growth of Nanotechnology Research in China." *Scientometrics*. 86(2):299-315.

190. ‡Tang, Li and **Philip Shapira**. 2011. "China-US Scientific Collaboration in Nanotechnology: Patterns and Dynamics." *Scientometrics*. 88(1):1-16. doi: 10.1007/s11192-011-0376-z

191. Te Kulve, Haico and **Arie Rip**. 2011. "Constructing Productive Engagement: Pre-engagement Tools for Emerging Technologies." *Science and Engineering Ethics*. 17(4):699-714. doi: 10.1007/s11948-011-9304-0

192. ‡Valdivia, Walter. 2011. "The Stakes in Bayh-Dole: Public Values Beyond the Pace of Innovation." *Minerva*. 49(1):25-46. doi: 10.1007/s11024-011-9162-6

193. Van Est, Rinie. 2011. "The Broad Challenge of Public Engagement in Science Commentary on: Constitutional Moments in Governing Science and Technology." *Science and Engineering Ethics*. 17(4):639-648. doi: 10.1007/s11948-011-9296-9

194. Van Oudheusden, Michiel. December 2011. "Questioning 'Participation': A Critical Appraisal of its Conceptualization in a Flemish Participatory Technology Assessment." *Science and Engineering Ethics*. 17(4):673-690. doi: 10.1007/s11948-011-9313-z

195. Von Schomberg, Rene. December 2011. "On Identifying Plausibility and Deliberative Public Policy. Commentary on Negotiating Plausibility: Intervening in the Future of Nanotechnology." *Science and Engineering Ethics*. 17(4):739-742. doi: 10.1007/s11948-011-9305-z

196. ‡**Wang, Jue** and **Philip Shapira**. 2012. "Partnering with Universities: A Good Choice for Nanotechnology Start-up Firm." *Small Business Economics*. 38(2):197-215.

197. ‡**Wang, Jue** and **Philip Shapira**. 2011. "Funding Acknowledgement Analysis: an Enhanced Tool to Investigate Research Sponsorship Impacts: the Case of Nanotechnology." *Scientometrics*. 87(3):563-586. doi: 10.1007/s11192-011-0362-5

198. ‡Wang, Qian, Qin Zhu and Li Yi Yun. 2010. "Philosophical Reflections on the Management of Nanotechnological Risks." *Chinese Science Bulletin*. 55:0-8.

199. ‡Wender, Benjamin, Rider W. Foley, **David H. Guston**, **Thomas P. Seager** and **Arnim Wiek**. 2013. "Anticipatory Governance and Anticipatory Life Cycle Assessment of Single Wall Carbon Nanotube Anode Lithium ion Batteries." *Nanotechnology, Law and Business*. 9(3):101-118.

200. ‡ Wender, Benjamin A., Rider W. Foley, Valentina Prado, Daniel A. Eisenberg, Troy A. Hottle, Jathan Sadowski and **Thomas P. Seager**. In review. "Anticipatory Life Cycle Assessment for Responsible Research and Innovation." *Journal of Responsible Innovation*.

201. ‡**Wetmore, Jameson**. 2012. "A Place for Religion in Nanotechnology Debates." *Covalence, special issue on Faith, Ethics and Nanotechnology*. Chris Toumey (ed.), June.

202. **Wiek, Arnim**, Barry Ness, Petra Schweizer-Ries and Francesca Farioli. 2012. "From Complex Systems Analysis to Transformational Change: a Comparative Appraisal of Sustainability Science Projects." *Sustainability Science*. 7:5-24. doi: 10.1007/s11625-011-0148-y

203. ‡**Wiek, Arnim**, **David H. Guston**, **Sander van der Leeuw**, **Cynthia Selin** and **Philip Shapira**. 2013. "The Nano-Enhanced City, Sustainability Challenges, and Anticipatory Governance." *Journal of Urban Technology*. 20(2):45-62.

204. ‡**Wiek, Arnim**, Lauren Withycombe Keeler, Vanessa Schweizer and Daniel J. Lang. 2013. "Plausibility Indications in Future Scenarios." *International Journal of Foresight and Innovation Policy*. 9(2/3/4):133-147.

205. ‡**Wiek, Arnim**, Rider W. Foley and **David H. Guston**. 2012. "Nanotechnology for Sustainability: What Does Nanotechnology Offer to Address Complex Sustainability Problems." *Journal of Nanoparticle Research*. 14(9):1093-1112. doi: 10.1007/s11051-012-1093-0

206. ‡**Wiek, Arnim**, Rider W. Foley, **David H. Guston** and Michael J. Bernstein. In review. "Broken Promises and Breaking Ground for Responsible Innovation – Intervention Research to Transform Business-as-Usual in Nanotechnology Innovation." *ACS Green Chemistry and Sustainability*.

207. ‡Woodson, Thomas. 2012. "Inequality in Nanomedicine." *Journal of Business Chemistry*. 9(3):133-146.

208. **Wynne, Brian**. 2011. "Lab-Work Goes Social, and Vice-Versa: Strategising Public Engagement Processes. Commentary on: What Happens in the Lab Does Not Stay in the Lab: Applying Midstream Modulation to Enhance Reflection in." *Science and Engineering Ethics*. 17(4):791-800. doi: 10.1007/s11948-011-9316-9

209. ‡**Xenos, Michael A.**, **Amy B. Becker**, Ashley A. Anderson, **Dominique E. Brossard** and **Dietram A. Scheufele**. 2011. "Stimulating Upstream Engagement: An Experimental Study of Nanotechnology Information Seeking." *Social Science Quarterly*. 92(5):1191-1214.

210. ‡Ye, X., Yun Liu and **Alan L. Porter**. 2012. "International Collaborative Patterns in China's Nanotechnology Publications." *Journal of Technology Management*. 59(3/4):255-272. doi: 10.1504/IJTM.2012.047246

211. ‡Yeo, Sara K., Michael A. Cacciatore, **Dominique E. Brossard**, **Dietram A. Scheufele**, Kristin K. Runge, Leona Yi-Fan Su and **Elizabeth A. Corley**. 2014. "Partisan Amplification of Risk: American Perceptions of Nuclear Energy Risk in the Wake of the Fukushima Daiichi Disaster." *Energy Policy*. 67:727-736. doi: http://dx.doi.org/10.1016/j.enpol.2013.11.061

212. ‡Yeo, Sara K., **Michael A. Xenos**, **Dominique E. Brossard** and **Dietram A. Scheufele**. In review. "Selecting our own Science: How Communication Contexts and Individual Traits Shape Information Seeking." *The ANNALS of the American Academy of Political and Social Science*.

213. ‡Yeo, Sara K., Xuan Liang, **Dominique E. Brossard** and **Michael A. Xenos**. In review. "Is the Online Environment Changing the Construction of Scientific Controversies?" *Public Understanding of Science*.

214. ‡**Youtie, Jan**, **Alan L. Porter**, **Philip Shapira**, Li Tang and Troy Benn. 2011. "The Use of Environmental Health and Safety Research in Nanotechnology Research." *Journal of Nanoscience and Nanotechnology*. 11:158-166.

215. ‡**Youtie, Jan**, **Diana Hicks**, **Philip Shapira** and Travis Horsley. 2012. "Pathways from Discovery to Commercialisation: Using Web Sources to Track Small and Medium-Sized Enterprise Strategies in Emerging Nanotechnologies." *Technology Analysis & Strategic Management*. 24(10):981-995. doi: 10.1080/09537325.2012.724163

216. ‡**Youtie, Jan**, Juan D. Rogers, Thomas Heinze, **Philip Shapira** and Li Tang. 2013. "Career-based influences on scientific recognition in the United States and Europe: Longitudinal Evidence from Curriculum Vitae Data." *Research Policy*. 42(8):1341-1355.

217. ‡**Youtie, Jan** and Luciano Kay. 2014. "Acquiring Nanotechnology Capabilities: Role of Mergers and Acquisitions." *Technology Analysis & Strategic Management*. doi: http://dx.doi.org/10.1080/09537325.2013.872773

218. ‡**Youtie, Jan**, **Maurizio Iacopetta** and **Stuart Graham**. 2008. "Assessing the Nature of Nanotechnology: Can We Uncover an Emerging General Purpose Technology." *Journal of Technology Transfer*. 33:315-329.

219. ‡**Youtie, Jan** and **Philip Shapira**. 2008. "Mapping the Nanotechnology Enterprise: A Multi-indicator Analysis of Emerging Nanodisticts in the U.S. South." *Journal of Technology Transfer*. 33:209-223.

220. ‡**Youtie, Jan**, **Philip Shapira** and **Alan L. Porter**. 2008. "Nanotechnology Publications and Citations by Leading Countries and Blocs." *Journal of Nanoparticle Research*. 10(6):981-986.

221. ‡**Youtie, Jan**, Stephen Carley, **Philip Shapira**, **Elizabeth A. Corley** and **Dietram A. Scheufele**. In review. "Perceptions and Actions: Examining the Relationship between Views on Risk and Citation Actions of Nanotechnology Scientists." *Risk Analysis*.

222. ‡**Youtie, Jan**, Stephen Carley, **Philip Shapira**, **Elizabeth A. Corley** and **Dietram A. Scheufele**. 2011. "Perceptions and Actions: Examining the Relationship between Views on Risk and Citation Actions of Nanotechnology Scientists." *Research Evaluation*. 20(5):377-388. doi: 10.3152/095820211X13176484436014

Trade Journal Article

1. ‡**Corley, Elizabeth A.** and **Dietram A. Scheufele**. 2010. "Outreach Going Wrong? When We Talk Nano to the Public, We are leaving Behind Key Audiences." *The Scientist*. 24(1):22.

2. ‡**Guston, David H.** 2010. "5 Questions: About Nanoscience." *Phoenix Business Journal*.

3. Ladwig, Peter, Ashley A. Anderson, **Dominique E. Brossard**, **Dietram A. Scheufele** and Bret Shaw. May 2010. "Narrowing the Nano Discourse." *Materials Today*. 13(5):52-54. doi: 10.1016/S1369-7021(10)70084-5

4. ‡**Nisbet, Matthew C**. and **Dietram A. Scheufele**. October 2007. "The Future of Public Engagement." *The Scientist*. 21(10):38-44.

5. ‡**Scheufele, Dietram A.** 2007. "Nano Does Not Have a Marketing Problem Yet." *Nano Today*. 2(5):48.

6. ‡**Scheufele, Dietram A.** 2006. "Five Lessons in Nano Outreach." *Materials Today*. 9(5):64.

7. ‡**Scheufele, Dietram A.** 2006. "If We Are to Communicate Successfully With the Public, We Need to Learn How to Frame the Message for Different Audiences." *Materials Today*. 9(5):64.

8. ‡**Scheufele, Dietram A.** and **Dominique E. Brossard**. 2008. "Nanotechnology as a Moral Issue? Religion and Science in the U.S." *AAAS Professional Ethics Report*. 21(1):1-3.

9. ‡**Scheufele, Dietram A.**, **Dominique E. Brossard**, **Sharon Dunwoody**, **Elizabeth A. Corley**, **David H. Guston** and **Hans P. Peters**. 2009. "Are Scientists Really Out of Touch?" *The Scientist*.

10. ‡**Scheufele, Dietram A.** and **Elizabeth A. Corley**. 2008. "The Science and Ethics of Good Communication." *Next Generation Pharmaceutical*. 4(1):66.

11. **Wetmore, Jameson**. 2010. "Science's Influence: Response to Science's Uncertain Authority in Policy by John Marburger." *Issues in Science and Technology*. 27(1):10-12.

12. ‡**Wetmore, Jameson** and **Jonathan Posner**. 2009. "Should Corporations Contribute to Nano-Regulation?" *Nano Today*. 4(3):217-219. doi: 10.1016/j.nantod.2009.03.002

13. ‡Yeo, Sara K., **Michael A. Xenos**, **Dominique E. Brossard** and **Dietram A. Scheufele**. 2014. "Disconnected Discourses." *Materials Today*. 17(2):48-49. doi: http://dx.doi.org/10.1016/j.mattod.2014.01.002

Other Journal Article

1. **Downey, Gary Lee**, **Juan C. Lucena**, **Donna Riley** and **Jameson Wetmore**. 2013. "They’re here to Help: Social Scientists Enable Engineers to See the Gaps in their own Expertise." *Last Word, ASEE Prism*. p. 60.

2. ‡**Fisher, Erik**. 2011. "Editorial Overview: Public Science and Technology Scholars: Engaging Whom." *Special Issue of Science and Engineering Ethics*. 17(4):607-620.

3. ‡Fisher, Erik. 2006. "Embedded Nanotechnology Policy Research." *Ogmius*. 14:3-4.

4. **Fisher, Erik**. 2008. "Review of Evan Selinger; Robert P. Crease (eds.). The Philosophy of Expertise." *Isis*. 99(1):232-233. doi: 10.1086/589405

5. **Fisher, Erik**, **Simon Biggs**, **Stuart Lindsay** and **Jie Zhao**. 2010. "Correspondence: Research Thrives on Integration of Natural and Social Sciences." *Nature*. 463(7284):1018.

6. ‡**Guston, David H**. 2013. "Introduction to the Special Issue: Nanotechnology and Political Science." *Review of Policy Research*. 30(5):439-446. doi: http://dx.doi.org/10.1111/ropr.12038

7. ‡**Guston, David H.** 2011. "Participating Despite Questions: Toward a More Confident Participatory Technology Assessment." *Science and Engineering Ethics*. 17(4):691-697. doi: 10.1007/s11948-011-9314-y

8. ‡**Guston, David H.** 2009. "Deliberating Nanotechnology in the U.S." *British Science Association's People & Science*. p. 22.

9. ‡**Guston, David H.** 2008. "Innovation Policy: Not Just a Jumbo Shrimp." *Nature*. 454:940-941.

10. ‡**Guston, David H.** 2006. "Responsible Knowledge-Based Innovation." *Society*. 43(4):19-21. doi: 10.1007/BF02687530

11. ‡**Guston, David H.**, **Daniel Sarewitz** and **Clark A. Miller**. 2009. *Correspondence: Scientists Not Immune to Partisanship*. Science, 323:582.

12. ‡**Guston, David H.**, **Erik Fisher**, **Armin Grunwald**, **Richard Owen**, **Tsjalling Swiestra** and **Simone van der Burg**. 2014. "Responsible Innovation: Motivations for a Journal." *Journal of Responsible Innovation*. 1(1):1-8.

13. Kim, Byoungyoon. 2009. "Socio-Technical Integration Research." *NanoWeekly*. 313:10-11.

14. **Leung, Ricky C.** 2012. "Cluster-Based Advantages in the Innovation Process: The Diffusion of Nanotechnology in Two Chinese Cities." *Frontiers of Business Research in China*. 6(1):25-54. doi: 10.3868/s070-001-012-0002-3

15. ‡**Leung, Ricky C.** 2011. "Network Building in the Innovation Journey: How Chinese Science Institutes Jump on the Nanotech Bandwagon." *East Asian Science, Technology and Society: An International Journal*. 6:167-197.

16. ‡Liang, Xuan, Ashley A. Anderson, **Dietram A. Scheufele**, **Dominique E. Brossard** and **Michael A. Xenos**. April 2012. "Information Snapshots: What Google Searches Really Tell Us About Emerging Technologies." *Nano Today*. 7(2):72-75. doi: 10.1016/j.nantod.2012.01.001

17. **Mahootian, Farzad**. In preparation. "Complimentarity and Self-Reflexive Science: A Systems View of Laboratory Engagement Studies." *Conference Proceedings of Empirical Philosophy of Science.*

18. **Mahootian, Farzad** and Tara-Marie Mahootian. 2012. "Jung and Laboratory Ethnographies: Lab as Locus of Transformative Research." *Conference Proceedings of Jung in the Academy and Beyond: 100 Years Later*. p. 7.

19. ‡Pirtle, Zach. 2006. "Nanotechnology: Constructing a Proactive Science Policy towards Democracy." *The Triple Helix: The International Journal of Science, Society and Law*. 3(1):48.

20. ‡**Robert, Jason S.** 2008. "Review of Nanoethics." *Studies in Ethics, Law, and Technology*. 2(1). doi: 10.2202/1941-6008.1027

21. ‡**Roco, Mihail C.**, **Barbara Harthorn**, **David H. Guston** and **Philip Shapira**. 2011. "Innovative and Responsible Governance of Nanotechnology for Societal Development." *Journal of Nanoparticle Research*. 13(9):3557-3590.

22. ‡**Selin, Cynthia**. 2014. "On Not Forgetting Futures." *Journal of Responsible Innovation*. 1(1):103-108.

23. ‡**Schneider, Jennifer** and **Carl Mitcham**. 2008. "Working toward Nanotechnology Consensus." *ethix*. 59:18-19.

24. ‡**Shapira, Philip** and **Jue Wang**. 2010. "Comment: Follow the Money. What was the Impact of the Nanotechnology Funding Boom of the Past Ten Years." *Nature*, 468(7324): 627-628.

25. ‡**Wetmore, Jameson**. 2012. "The Value of the Social Sciences for Maximizing the Public Benefits of Engineering." *The Bridge*. 42(3):40-45.

26. ‡**Wetmore, Jameson**. 2007. "Introduction to special issue on science, policy and social inequity." *Science and Public Policy*. 34(2):83-84.

27. ‡**Wetmore, Jameson**. 2006. "Nanotalk: Conversations with Scientists and Engineers about Ethics, Meaning, and Belief in the Development of Nanotechnology." *Science and Engineering Ethics*. 12(3):583.

28. ‡**Wetmore, Jameson**, **Ira Bennett**, William H. Hooke and Tim Miller. 2009. *Correspondence: Scientists: Listen Up! - Letter*. Science, 324: 334.

29. ‡**Wiek, Arnim**, **David H. Guston**, Emma Frow and Jane Calvert. 2012. "Sustainability and Anticipatory Governance in Synthetic Biology." *International Journal of Social Ecology and Sustainable Development*. 3(2):25-38. doi: 10.4018/jsesd.2012040103

30. ‡**Wiek, Arnim** and **Rider W. Foley**. 2013. "The Shiny City and its Dark Secrets: Nanotechnology and Urban Development." *Curb Magazine*. 4(3):26-27.

31. Zhu, Qin and Wang Qian. 2010. "社会技术系统论视角下的工程伦理学研究 [The social technical system approach to engineering ethics studies]." *道德与文明 [Morality and Civilization]*. 6:119-124.

Periodical (popular magazines, newspapers)

1. ‡**Brossard, Dominique E.** and **Dietram A. Scheufele**. 2013. "This Story Stinks." *The New York Times*.

Internet

1. **Allenby, Braden** and **Daniel Sarewitz**. May 27, 2010. "Telepathic Helmets! Power-Generating Pants! How Will Military Technology Change the Way We Live." The Takeaway. http://www.thetakeaway.org/2010/may/27/how-military-tech-will-change-way-we-live/

2. **Allenby, Braden** and Peter de Marneffe. April 19, 2013. "Privacy in the Nano City: Humans and nano- enabled Communication Technologies." CNS-ASU Science Café. http://vimeo.com/66590177

3. **Anbar, Ariel** and **Michael E. Smith**. February 19, 2010. "The End of Earth: If Not in 2010, Then When." CNS-ASU Science Café. http://www.youtube.com/watch?feature=player_embedded&list=PL1A16C368795630FA&v=Wvy4RjN25_k#!

4. **Barker, Anna** and Denise Meridith. May 17, 2013. "Healing in the Nano City: Designing Equity into Transformative Healthcare." CNS-ASU Science Café. http://vimeo.com/67158736

5. **Bennett, Ira** and Timothy Boyd. November 2012. "Equity in the Nano City: How Can Nanotechnology Empower Equitable Water Distribution?" CNS-ASU Science Café. http://vimeo.com/61026266

6. Bowditch, Rachel, Matt Watkins and **Karin D. Ellison**. October 16, 2009. "Bone Portraits: Scenes from a Play about the Invention of the X-Ray." CNS-ASU Science Café. http://www.youtube.com/user/CNSCSPO#p/u/3/oxKLLuSWsAc

7. Calabrese, Francesco. December 2, 2010. "Modeling Urban Mobility Using Pervasive Technologies." Emerging Technology & The Future Series. http://vimeo.com/27543685

8. Cavalier, Darlene. January 16, 2014. "Citizen Science! New Technologies, New Audiences." CNS-ASU Science Café. http://vimeo.com/86728343

9. **Coleman, Grisha** and **Aaron Golub**. October 2012. "Moving in the Nano City: What will the Impact Be?." CNS-ASU Science Café. http://vimeo.com/60475625

10. **Conz, David**. February 23, 2012. "What Beer Can Teach Us About Emerging Technologies. The Home-Brew Movement Serves as a Lesson in DIY Innovation." Slate. http://www.slate.com/articles/technology/future_tense/2012/02/home_brew_and_the_diy_innovation_movement_.html

11. **Conz, David**. September 15, 2010. "Getting from Here to There: Aiming at a Moving Target in a Changing Landscape." CSPO Soapbox. http://www.cspo.org/soapbox/view/100915P8IM/getting-from-here-to-there-aiming-at-a-moving-target-in-a-changing-landscape/

12. **Cozzens, Susan** and **Jameson Wetmore**. 2011. "Yearbook of Nanotechnology in Society, Volume 2: Nanotechnology and the Challenge of Equity, Equality and Development (Video)." http://www.youtube.com/watch?v=R_WfmJjTLZ0&list=UU2hhshdW_r3vnk5E_PYybXg&index=6&feature=plcp

13. Davies, Sarah R. February 16, 2010. "Risk, Narrative, and Dilemma: Reading Public Responses to Emerging Technologies." CNS-ASU Occasional Speaker. http://www.youtube.com/watch?v=UgffTUFP1Dc&feature=player_embedded

14. de Ridder-Vignone, Kathryn. September 17, 2013. "Material Deliberation as Public Engagement in the Nanoscale Informal Science Education (NISE) Network." CNS-ASU Occasional Speaker. http://vimeo.com/78569389

15. **Finn, Edward** and **Wiek, Arnim**. September 12, 2012. "Envisioning the Nano City: How Will it Look?" CNS-ASU Science Café. http://vimeo.com/60348840

16. **Fisher, Erik** and **Daniel Sarewitz**. 2011. "STIR (Socio-Technical Integration Research)." http://www.cspo.org/scisip/movies/

17. **Foladori, Guillermo**. November 24, 2010. "Opinion: Nanotech for health is not just about disease." SciDev Net - Science and Development Network. http://www.scidev.net/en/new-technologies/opinions/nanotech-for-health-is-not-just-about-disease-1.html

18. Foley, Rider W. April 18, 2012. "Innovation + City = Prosperity." The Sustainability Review. http://www.thesustainabilityreview.org/2012/04/18/innovation-city-prosperity/

19. Foley, Rider W. February 3, 2012. "Sports Science, Technology, and Society." CSPO Soapbox. http://www.cspo.org/soapbox/view/1202031604P86888696LH/sports--science-technology-and-society/

20. **Garreau, Joel**. August 26, 2009. "The Future of Cities." CNS-ASU Occasional Speaker. Presentation. http://www.youtube.com/watch?v=Q99ga43ZNd8&feature=player_embedded

21. **Goodnick, Stephen** and **Tim Lant** November 20, 2009. "Good to the Last Drop? The Water-Energy Connection." CNS-ASU Science Café. http://www.youtube.com/watch?v=HryWsrq4XSA&feature=player_embedded#at=154

22. **Guston, David H.** March 03, 2013. "The March 03, 2013. "The Scholars Circle and Insighters Radio." KPFK Radio. http://www.armoudian.com/log/scholars-circle/the-scholars-circle-insighters-radio-mar-3rd-2013/

23. **Guston, David H.** December 5, 2011. "Michael Crichtons Last Stand." Slate. http://www.slate.com/articles/technology/future_tense/2011/12/michael_crichton_s_micro_and_how_scientists_talk_to_the_public_.single.html

24. **Guston, David H.** February 21, 2011. "Are We Alone - Nano Nano." SETI Radio. http://radio.seti.org/blog/2011/02/are-we-alone-nano-nano-david-guston/

25. **Guston, David H.** December 10, 2010. "Golden Fleece 2.0." CSPO Soapbox. http://www.cspo.org/soapbox/view/101210P6OT/golden-fleece-20/

26. **Guston, David H.** August 9, 2010. "The Puddle Gator." CSPO Soapbox. http://www.cspo.org/soapbox/view/100809P5HQ/the-puddle-gator/

27. **Guston, David H.** March 30, 2010. "Public Engagement with Nanotechnology." 2020Science.org. http://2020science.org/2010/03/30/public-engagement-with-nanotechnology/

28. **Guston, David H.** September 25, 2009. "Who by Fire." CSPO Soapbox. http://www.cspo.org/soapbox/view/090925P5PS/who-by-fire/

29. **Guston, David H.** March 20, 2009. "Nanotechnology and Public: Data for Decision Makers Briefing to the U.S. Congressional Nanotechnology Caucus." ASU President's Office Podcast. http://president.asu.edu/node/661

30. **Guston, David H.** September 25, 2007. "Toward Anticipatory Governance." nanoHUB.org. http://nanohub.org/resources/3270/

31. **Guston, David H.** and **Cynthia Selin**. January 2013. "Life In 2030." IEEE Spectrum Radio. http://www.prx.org/pieces/89782-life-in-2030

32. **Guston, David H.**, George Poste and Subhash Mahajan. October 10, 2007. "Tools of the Trade - Nanotechnology." ASU Spotlight. http://www.youtube.com/watch?v=E-cxH_KShNQ

33. Harsh, Matthew. May 12, 2011. "Careful design is key to success of development prizes." Science and Development Network. http://www.scidev.net/en/opinions/careful-design-is-key-to-success-of-development-prizes-1.html

34. **Honsberg, Christiana** and Nancy LaPlaca. March 15, 2013. "Power in the Nano City: Electricity, Democracy, and Mutual Influence." CNS-ASU Science Café. http://vimeo.com/64846660

35. **Irwin, Alan**. February 12, 2010. "The Good, the Bad, and the Perfect: Anticipating Engagement amidst Critical Regimes." CNS-ASU Occasional Speaker. http://www.youtube.com/watch?v=TFns52m-wL4&feature=player_embedded#at=15

36. **Jenik, Adriene** and Dee Dee Falls. January 2013. "Learning the Nano City." CNS-ASU Science Café. http://vimeo.com/60685521

37. **Kosal, Margaret E.** February 4, 2010. "Nanotechnology for Chemical and Biological Defense: Policy, Programs, and Threat Anticipation." CNS-ASU Occasional Speaker. http://www.youtube.com/watch?v=ETnhbdyWVTg&feature=player_embedded#at=70

38. Klug Boonstra, Sheri. February 20, 2014. "Citizen Science Goes to Mars." CNS-ASU Science Café. http://vimeo.com/90169360

39. **Martins, Paulo** and **David H. Guston**. May 3, 2011. "Center for Nanotechnology in Society at Arizona State University." Renanosomo Brazilian Research Network. http://nanotecnologiadoavesso.org/tv/programa-n-112-0

40. **Miller, Clark A.** October 26, 2010. "Why Nano Matters: Saving the World." Nanoscale Informal Science Education Network. http://www.nisenet.org/blogs/real_world_nano/why_nano_matters_saving_world

41. **Miller, Clark A.** April 27, 2010. "Nanotechnology for Human Enhancement: What Does the Public Think?" Nanoscale Informal Science Education Network. http://www.nisenet.org/blogs/real_world_nano/nanotechnology_human_enhancement_what_does_public_think

42. **Miller, Clark A.** April 22, 2010. "Why Does Nano Matter? Bio-Non-Bio Interfaces." Nanoscale Informal Science Education Network. http://www.nisenet.org/blogs/real_world_nano/why_does_nano_matter_bio-non-bio_interfaces

43. **Miller, Clark A.** February 15, 2010. "Why does Nano Matter? Surface Area." Nanoscale Informal Science Education Network. http://www.nisenet.org/blogs/real-world-nano

44. **Miller, Clark A.** January 26, 2009. "Welcome to Real World Nano." Nanoscale Informal Science Education Network. http://www.nisenet.org/blogs/real-world-nano

45. **Nisbet, Matthew C.**, **Dominique E. Brossard** and **Dietram A. Scheufele**. 2009. "Science Needs a Storyline." The Observatory (Columbia Journalism Review). http://www.cjr.org/the_observatory/science_needs_a_storyline.php?page=all

46. **Petrucci, Darren** and **Kelly Campbell Rawlings**. March 15, 2013. "Evolving in the Nano City: Urban Design, Urban Culture and Forces of Changes." CNS-ASU Science Café. http://vimeo.com/60790108

47. **Randles, Sally**. October 22, 2013. "Toward an Institutionalist Sociology of Responsible Innovation." Presentation. CNS-ASU Occasional Speaker. http://vimeo.com/86551033

48. **Rittmann, Bruce** and **Dawn Schwenke**. September 18, 2009. "Ending Age-Related Disease: How Will Our Lives Change if We're Healthier Longer." CNS-ASU Science Café. http://www.youtube.com/user/CNSCSPO#p/u/0/OosMX0OHi14

49. **Sarewitz, Daniel** and **Erik Fisher.** 2011. "New Tools for Science Policy." http://www.cspo.org/scisip/movies/

50. **Scheufele, Dietram A.** 2013. "Comment isn't Free: The Downside of Web 2.0." New Scientist. http://www.newscientist.com/article/dn24403-comment-isnt-free-the-downside-of-web-20.html#.UzSGZM4bGbJ

51. **Scheufele, Dietram A.** 2011. "Science 2.0: Media, Politics and Emerging Technologies." http://deimos3.apple.com/WebObjects/Core.woa/Browse/wisc-public.4152237876

52. Schuurbiers, Daan. April 15, 2009. "In Amerika." TU Delta. http://www.delta.tudelft.nl/artikel/in-amerika-3/19402

53. Schuurbiers, Daan. March 11, 2009. "In Amerika." TU Delta. http://www.delta.tudelft.nl/artikel/in-amerika-2/19206

54. Schuurbiers, Daan. February 5, 2009. "In Amerika." TU Delta. http://www.delta.tudelft.nl/article/in-amerika-1/19054

55. **Selin, Cynthia.** October 30, 2009. "Does Time Need Saving." CSPO Soapbox. http://www.cspo.org/soapbox/view/091030P7XS/does-time-need-saving/

56. **Selin, Cynthia.** August 13, 2009. "More than a Policy: the Future of Energy Technologies." CSPO Soapbox. http://www.cspo.org/soapbox/view/090813P0QU/more-than-a-policy-the-future-of-energy-technologies/

57. **Selin, Cynthia.** June 14, 2009. "Flag Day 2009." CSPO Soapbox. http://www.cspo.org/soapbox/view/090620P2PP/flag-day-2009/

58. **Selin, Cynthia**, **Thanassis Rakakis** and **Joel Garreau**. February 28, 2012. "Emerge: Artists, Scientists Redesigning the Future." KAET Horizon. https://asunews.asu.edu/20120229_video_emerge

59. **Sommerfield, Milton R.**, **Mark Edwards** and **David Conz**. January 15, 2010. "Bugs for Fuel: Microbes in out Energy Future." CNS-ASU Science Café. http://www.youtube.com/watch?v=T0IbiYOH4TU&feature=player_embedded#at=26

60. **Wetmore, Jameson**. January 09, 2013. "Creating Space in Science Centers for Public Discussions about the Social Aspects of Science and Technology." Genotype: a blog from the ESRC Genomics Policy and Research Forum. http://esrcgenomicsforum.blogspot.com/2013/01/creating-space-in-science-centers-for.html

61. **Wetmore, Jameson**. December 24, 2012. "New Technology is Making Us More like the Amish." Slate. http://www.slate.com/blogs/future_tense/2012/12/24/smartphones_tablets_make_us_think_about_technology_like_the_amish_do.html

62. **Wetmore, Jameson**. December 3, 2012. "We're becoming a Bit More Amish." As We Now Think. http://aswenowthink.wordpress.com/2012/12/03/were-becoming-a-bit-more-amish/

63. **Wetmore, Jameson**. December 20, 2012. "The Frustrations of a Luddite Handwasher." As We Now Think. http://aswenowthink.wordpress.com/2012/12/20/the-frustrations-of-a-luddite-handwasher/

64. **Wetmore, Jameson**. October October 31, 2012. "Dubai: Technology or Freedom." As We Now Think. http://aswenowthink.wordpress.com/2012/10/31/dubai-technology-or-freedom/

65. **Wetmore, Jameson**. 2012. "Decisions in Personal Lives." NISE Net Video Series. http://vimeo.com/50532883

66. **Wetmore, Jameson**. 2012. "Light Switch." NISE Net Video Series. http://vimeo.com/50538701

67. **Wetmore, Jameson**. 2012. "Cell Phone Rules." NISE Net Video Series. http://vimeo.com/50530764

68. **Wetmore, Jameson**. 2012. "Speed Bump." NISE Net Video Series. http://vimeo.com/50530523

69. **Wetmore, Jameson**. November 21, 2011. "The Dangers of Hype and Hope." CSPO Soapbox. http://archive.cspo.org/soapbox/view/100524P3FA/the-dangers-of-hype-and-hope/

70. **Wetmore, Jameson**. September 7, 2010. "Engaging Policymakers: Not an Academic Exercise." CSPO Soapbox. http://www.cspo.org/soapbox/view/100907P1JQ/engaging-policymakers-not-an-academic-exercise/

71. **Wetmore, Jameson**. August 29, 2010. "Blogging from France: Consensus Conferences." CSPO Soapbox. http://www.cspo.org/soapbox/view/100829P5YL/blogging-from-france-consensus-conferences/

72. **Wetmore, Jameson**. August 27, 2010. "Blogging from France: Benny was the Star." CSPO Soapbox. http://www.cspo.org/soapbox/view/100827P5HQ/blogging-from-france--benny-was-the-star/

73. **Wetmore, Jameson**. August 26, 2010. "Blogging from France: The Deficit Model." CSPO Soapbox. http://www.cspo.org/soapbox/view/100826P5YJ/blogging-from-france-the-deficit-model/

74. **Wetmore, Jameson**. August 25, 2010. "Blogging from France: Values and Airplane Food." CSPO Soapbox. http://www.cspo.org/soapbox/view/100825P5SJ/blogging-from-france-values-and-airplane-food/

75. **Wetmore, Jameson**. August 24, 2010. "Blogging from France: Science and the Public Debate." CSPO Soapbox. http://www.cspo.org/soapbox/view/100824P9QS/blogging-from-france--science-and-the-public-debate/

76. **Wetmore, Jameson.** February 12, 2010. "Powering Down on Valentines Day." CSPO Soapbox. http://www.cspo.org/soapbox/view/100212P3YZ/powering-down-on-valentines-day/

77. **Wetmore, Jameson.** April 5, 2009. "The View from a Tuc-Tuc." CSPO Soapbox. http://www.cspo.org/soapbox/view/090620P9VF/the-view-from-a-tuctuc/

78. **Wienroth, Matthias.** August 26, 2009. "Strategic Science: Research Intermediaries and the Governance of Innovation." CNS-ASU Occasional Speaker. http://www.youtube.com/user/CNSCSPO#p/u/2/6xsBtM3Rdno

79. Yeo, Sara K., **Dominique E. Brossard**, **Dietram A. Scheufele**, **Paul Nealey** and **Elizabeth A. Corley**. 2013. "Tweeting to the Top." The Scientist. http://www.the-scientist.com/?articles.view/articleNo/36274/title/Opinion--Tweeting-to-the-Top/

80. **Youtie, Jan** and **Philip Shapira**. June 2007. "US Nanodistrict Development: 1990-2006." Post on YouTube. http://www.youtube.com/watch?v=tpBxLGcFjug

Report

1. ‡Carley, Stephen. 2008. *RTTA1 Nanotechnology Research Publication Databases: Updated to 2008*.CNS-ASU Report # R08-0004 Center for Nanotechnology in Society at ASU. Georgia Institute of Technology. Atlanta, GA.

2. ‡Davies, Sarah R. 2011. *Nanotechnology, Business, and Anticipatory Governance*.CNS-ASU Report #R11-0004 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

3. ‡Davies, Sarah, **Cynthia Selin** and Rebecca Allen. 2010. *Solar to Fuels: Report on Interdisciplinary Workshop*.CNS-ASU Report #R10-0002 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

4. ‡**Fisher, Erik**. 2012. *STIR: Socio-Technical Integration Research Project Annual Report to the NSF, Year 3*. Tempe, AZ.

5. ‡**Fisher, Erik**. 2011. *STIR: Socio-Technical Integration Research Project Annual Report to the NSF, Year 2*. Tempe, AZ.

6. ‡**Fisher, Erik**. 2010. *STIR: Socio-Technical Integration Research Project Annual Report to the NSF, Year 1*. Tempe, AZ.

7. ‡**Guston, David H.,** et al. 2013. *CNS-ASU Annual Report to the National Science Foundation, Year 8*.Annual Report for NSF Award #0937591 for the period of September 1, 2012 to August 31, 2013 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

8. ‡**Guston, David H.**, et al. 2012. *CNS-ASU Annual Report to the National Science Foundation, Year 7*.Annual Report for NSF Award #0937591 for the period of September 15, 2011 to September 14, 2012 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

9. ‡**Guston, David H.**, et al. 2011. *CNS-ASU Annual Report to the National Science Foundation, Year 6*.Annual Report for NSF Award #0937591 for the period of September 15, 2010 to September 14, 2011 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

10. ‡**Guston, David H.** 2010. *Societal Dimensions Research in the National Nanotechnology Initiative*.CSPO Report # 10-02 Consortium for Science, Policy and Outcomes and Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

11. ‡**Guston, David H.,** et al. 2010. *CNS-ASU Annual Report to the National Science Foundation, Year 5*.Annual Report for NSF Award #0531194 for the period October 1, 2009 to September 30, 2010 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

12. ‡**Guston, David H.**, et al. 2009. *CNS-ASU Annual Report to the National Science Foundation, Year 4*.Annual Report for NSF Award #0531194 for the period October 1, 2008 to September 30, 2009 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

13. ‡**Guston, David H.**, et al. 2008. *CNS-ASU Annual Report to the National Science Foundation, Year 3*.Annual Report for NSF Award #0531194 for the period October 1, 2007 to September 30, 2008 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

14. ‡**Guston, David H.**, et al. 2007. *CNS-ASU Annual Report to the National Science Foundation, Year 2*.Annual Report for NSF Award #0531194 for the period October 1, 2006 to September 30, 2007 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

15. ‡**Guston, David H.**, et al. 2006. *CNS-ASU Annual Report to National Science Foundation, Year 1*. Annual Report for NSF Award #0531194 for the period October 1, 2005 to September 30, 2006. Center for Nanotechnology in Society, Arizona State University, Tempe, AZ.

16. ‡**Hamlett, Patrick**, **Michael Cobb** and **David H. Guston**. 2008. *National Citizens Technology Forum: Nanotechnologies and Human Enhancement*.CNS-ASU Report #R08-0003 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

17. ‡Hays, Sean. 2011. *Can Art and Religion Serve as Methods for Governing Emerging Science and Technology*.CNS-ASU Report # R11-0005 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

18. ‡**Miller, Clark A.** 2006. *Boundary Organizations: Strategies for Linking Knowledge to Action*.CNS-ASU Report #R06-0001 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

19. ‡**Miller, Clark A.** 2006. *Nanotechnology in Society: A New Model of Anticipatory Governance*.Workshop Report No. 8 (ECETOC: Brussels). CNS-ASU Report #R06-0002 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

20. ‡**Miller, Clark A.**, **David H. Guston**, **Daniel Barben**, **Jameson Wetmore**, **Cynthia Selin** and **Erik Fisher**. 2007. *Nanotechnology and Society: Ideas for Education and Public Engagement*.CNS-ASU Report #R07-0001 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

21. Rothwell, Jonathan, **Jose Lobo**, **Deborah Strumsky** and Mark Muro. February 1, 2013. *Patenting Prosperity: Invention and Economic Performance in the United States and its Metropolitan Areas*. Washington, DC: Brookings Institute Report.

22. ‡**Porter, Alan L.**, **Jan Youtie** and **Philip Shapira**. 2006. *Briefing Paper: Refining Search Terms for Nanotechnology*.CNS-ASU Report #R06-0003 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

23. **Scheufele, Dietram A. and Elizabeth A. Corley**. 2010. *Capstone: Risk Management Methods & Ethical, Legal, and Societal Implications of Nanotechnology*.Report of the March 2010 Nantional Nanotechnology Initiative Workshop. Part IV of IV in the 2009-2010 NNI Environmental, Health, and Safety Workshop Series.

24. ‡**Selin, Cynthia**. 2011. *Gaming the Future*.CNS-ASU Report #R11-0003 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

25. ‡**Selin, Cynthia**. 2008. *The Future of Medical Diagnostics*.Scenario Development Workshop Report, CNS-ASU Report #R08-0001 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

26. ‡**Selin, Cynthia**. 2008. *CNS Visioning Workshop: Creating Scenarios about the Future of Anticipatory Governance*.CNS-ASU Report #R08-0002 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

27. ‡**Selin, Cynthia**, **Arnim Wiek**, **David H. Guston**, **Angela Wilkinson**, **Rafael Ramirez**. 2010. *Plausibility Project Workshop: Creating Research Agendas*.CNS-ASU Report #R10-0001 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

28. ‡**Shapira, Philip**, **Jan Youtie**, **Ajay S. Bhaskarabhatla**, et al. 2006. 2006. *Connecting the Dots: Creating a Southern Nanotechnology Network*. Georgia Tech Program in Science, Technology and Innovation Policy. Southern Growth Policies Board. Research Triangle Park, NC.

29. ‡Valdivia, Walter and **David H. Guston**. 2006. *Public Value Mapping*.Workshop Report, CNS-ASU Report #R06-0004 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

30. ‡**Van Horn, Carl** and **Aaron Fichtner**. 2008. *The Workforce Needs of Companies Engaged in Nanotechnology Research in Arizona*.#R08-0005 John J. Heldrich Center for Workforce Development. Rutgers, the State University of New Jersey. New Brunswick, NJ.

31. ‡**Van Horn, Carl**, Jennifer Cleary and **Aaron Fichtner**. 2009. *The Workforce Needs of Pharmaceutical Companies in New Jersey That Use Nanotechnology: Preliminary Findings*.#R09-0002 John J. Heldrich Center for Workforce Development. Rutgers, The State University of New Jersey. New Brunswick, NJ.

32. ‡**Van Horn, Carl**, Jennifer Cleary, Leela Hebbar and **Aaron Fichtner**. 2009. *A Profile of Nanotechnology Degree Programs in the United States*.#R09-0001 John J. Heldrich Center for Workforce Development. Rutgers, The State University of New Jersey. New Brunswick, NJ.

33. **Von Schomberg, Rene** and Sarah Davies. 2010. *Understanding Public Debate on Nanotechnologies: Options for Framing Public Policy*. European Commission.

34. ‡**Wiek, Arnim** and Rider W. Foley. 2011. *CNS Systematic Analysis Workshop: Urban Sustainability Syndromes*.CNS-ASU Report #R11-0001 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

35. ‡**Wiek, Arnim** and Rider W. Foley. 2011. *CNS Systematic Analysis Workshop: Urban NanoScape - Nanotechnology Expert Panel: Urban NanoScape Review*.CNS-ASU Report #R11-0002 Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

Working Papers

1. ‡Anderson, Ashley A**.**, **Jason A. Delborne**, **Daniel L. Kleinman**, Maria Powell and Mathilde Colin. 2009. "Communication of Emerging Technologies: How Individuals Engage in Information Seeking in Deliberative Settings." Working Paper.

2. ‡Carley, Stephen. 2010. "Charting the Growth of a New Field: Who is Citing Nanotoxicology Research." Working Paper.

3. ‡Carley, Stephen. 2009. "Diffusion Indicators for Nanotechnology Research in the United States and Europe." Working Paper.

4. ‡**Corley, Elizabeth A.** and **Meghna Sabharwal**. 2011. "Scholarly Collaboration and Productivity Patterns in Public Administration: Analyzing Recent Trends." Working Paper. Public Administration.

5. Davies, Sarah R. and **Cynthia Selin**. "Peopling Energy: The Difficulty with Deliberation on Nanotechnology, Energy, and Society." Working Paper. Under preparation for Environmental Communication: a Journal of Nature and Culture.

6. ‡**Fernandez-Ribas, Andrea**. 2009. "Global Patent Strategies of SMEs in Nanotechnology." Working Paper.

7. Foley, Rider W., **Arnim Wiek** and **David H. Guston**. In review. "Guiding Emerging Technologies: Applying Principles from Sustainability and Anticipatory Governance." Working Paper.

8. Foley, Rider W. and Braden Kay. In review. "Thinking about Technology in Society? Take a Walk." Working Paper.

9. Foley, Rider W., Braden Kay and **Arnim Wiek**. In review. "Walking the City: A Structured Approach to Learning with the Community." Working Paper.

10. Foley, Rider W., Michael J. Bernstein and **Arnim Wiek**. In review. "Responsibilities in Innovating Nanotechnology." Working Paper.

11. **Garcia-Mont, Aixa** and **David Conz**. 2009. "Latinas/os in Science, Technology, Engineering and Mathematics: Culture, Gender and Mentorship." Working Paper.

12. Guo, Ying, Lu Huang and **Alan L. Porter**. 2009. "Profiling Research Patterns for a New and Emerging Science and Technology: Dye-sensitized Solar Cells." Working Paper. Atlanta Conference on Science and Innovation Policy, October 2-3, 2009.

13. **Guston, David H.** "Understanding Anticipatory Governance." Working Paper. Social Studies of Science. Revise and resubmit.

14. ‡Laurent, Brice and **Erik Fisher**. In review. "Integration Discourses: Neo-determinism, Reflexivity, and the Mainstreaming of Science Studies." Working Paper.

15. ‡McKeon, Patrick. 2008. "Characterization of State-Level Nanotechnology Policy Initiatives and What It Means for Georgia." Working Paper.

16. ‡Meng, Yu and **Philip Shapira**. 2008. "Women in Patenting: Does Nanotechnology Make a Difference." Working Paper.

17. ‡Meng, Yu, **Philip Shapira** and Li Tang. 2010. "A Case Study of Nano-pigment Innovation in China: Probing the Co-evolution of Nanotechnology and the Innovation System." Working Paper. Nanomaterial Innovation Case Study, Chemical Heritage Foundation.

18. **Pereira, Angela** and **Cynthia Selin**. "Plausibility in Post-Normal Times." Working Paper. Under development.

19. ‡Powell, Maria, **Mathilde Colin**, **Daniel L. Kleinman**, **Jason A. Delborne** and Ashley A. Anderson. 2009. "Imagining Ordinary Citizens? Conceptualized and Actual Participants for Deliberations on Emerging Technologies." Working Paper.

20. ‡Powell, Maria, **Mathilde Colin**, **Jason A. Delborne**, **Daniel L. Kleinman** and Ashley A. Anderson. 2009. "Citizens' Reflections on their Participation in a Deliberative Exercise on Emerging Technologies." Working Paper.

21. **Rafols, Ismael**. 2010. "Missing Links in Nanomaterials Governance: Bringing Industrial Dynamics and Downstream Policies into view." Working Paper.

22. ‡Robinson, Douglas K. R., Lu Huang, Ying Guo and **Alan L. Porter**. 2010. "Towards a Systematic Framework for Anticipating and Evaluating Emerging S and T: Forecasting Innovation Pathways in Nanobiosensors and Deep Brain Interface Devices." Working Paper.

23. ‡**Rogers, Juan D.** 2008. "Research Centers as a Policy Tool in the U.S. National Nanotechnology Initiative: An Assessment of their Role in the U.S. System of Innovation." Working Paper.

24. **Selin, Cynthia**, et al. "New Dimensions of Plausibility." Working Paper. Under preparation for Nature.

25. **Selin, Cynthia** and **Arnim Wiek**. "A. Seeing and Unseeing: The Refracted Relevance of Plausibility in Scenario Development." Working Paper. Under development for World Future Review.

26. ‡**Shapira, Philip** and **Jan Youtie**. 2012. "The Economic Contributions of Nanotechnology to Green and Sustainable Growth." Working Paper. The International Symposium on Assessing the Economic Impact of Nanotechnology, Organization for Economic Cooperation and Development and the U.S. National Nanotechnology Initiative, Washington, DC.

27. ‡**Shapira, Philip**, **Jan Youtie** and **Alan L. Porter**. 2009. "The Emergence of Social Science Research in Nanotechnology." Working Paper. Science, Technology and Innovation Policy, Georgia Institute of Technology, Atlanta, GA.

28. ‡**Shapira, Philip**, **Jan Youtie** and Luciano Kay. 2010. "Corporate Entry into Nanotechnology through Patents and Publications: 1990 to 200." Working Paper. White Paper.

29. ‡**Shapira, Philip** and Jue Wang. 2008. "Case Study: Nanotechnology in the USA." Working Paper.

30. **Strumsky, Deborah**, **Jose Lobo** and **Sander van der Leeuw**. Strumsky, Deborah, Jose Lobo and Sander van der Leeuw. 2011. "Measuring the Relative Importance of Reusing, Recombining and Creating Technologies in the Process of Invention." Working Paper. Working paper #11-02-003 of the Santa Fe Institute.

31. ‡Subramanian, Vrishali. 2009. "Active Nanotechnology: What Can We Expect? A Perspective for Policy from Bibliographical and Bibliometric Analysis." Working Paper.

32. ‡Tang, Li and **Philip Shapira**. 2007. "Networks of Research Collaboration in China: Evidence from Nanotechnology Publication Activities, 1990-2006. Working Paper. Program on Nanotechnology Research and Innovations Assessment, Georgia Institute of Technology, Atlanta, GA.

33. Tang, Li, **Philip Shapira** and Yu Meng. 2010. "A Spin-in Model of Nanomaterials Innovation in China." Working Paper. Nanomaterial Innovation Case Study, Chemical Heritage Foundation.

34. **van der Leeuw, Sander**, **Arnim Wiek**, **J. Harlow** and **James Buizer**. 2012. "How Much Time Do We Have to Fail? The Urgency of Sustainability Challenges vis-a-vis Roadblocks and Opportunities in Sustainability Science." Working Paper. Sustainability Science February 2012, Special Issue (ICSS 2010).

35. **Wiek, Arnim** and **Cynthia Selin**. "Sustainable Anticipatory Governance." Working Paper. Under development.

36. Withycombe Keeler, Lauren and **Arnim Wiek**. In preparation, "What if the Future is not what we Envisioned? Advances in Sustainability Research and Planning through Contrasting, Non-intervention Scenarios." Working Paper.

37. Xenos, Michael A., **Dietram A. Scheufele** and **Dominique E. Brossard**. June 2013. "News Media Use and the Informed Public in the Digital Age." Working Paper.

38. Ying, Gao, **Alan H. Porter** and Lu Huang. 2009. "Nanotechnology-Enhanced Thin-Film Solar Cells: Analysis of Global Research Activities with Future Prospects." Working Paper. 2009 IAMOT Conference.

39. **Youtie, Jan**, **Philip Shapira** and **Juan D. Rogers**. 2009. "Blind Matching Versus Matchmaking: Comparison Group Selection for Highly Creative Researchers." Working Paper. Paper prepared for Atlanta Conference on Science and Innovation Policy on October 2-3, 2009.

40. ‡**Youtie, Jan**, **Philip Shapira** and **Juan D. Rogers**. 2009. "Nanotechnology-Enhanced Thin-Film Solar Cells: Analysis of Global Research Activities with Future Prospects."

41. Zhou, X. and **Alan L. Porter**. 2013. "Patent and Publication Comparison for a Promising Emerging Industry Nano-Enabled Drug Delivery." Working Paper.

42. Zhou, X., **Alan L. Porter** and Douglas K. R. Robinson. 2013. "Analyzing Research Publication Patterns to Gauge Future Innovation Pathways for Nano-Enabled Drug Delivery." Working Paper.

Thesis/Dissertation

1. ‡Akin, Heather. In review. 2014. "A Cross-cultural Comparison of Values, Knowledge, and Media Factors Affecting Public Perceptions of Climate Change." Doctoral Dissertation. Mass Communications. University of Wisconsin-Madison. Madison, WI.

2. Anderson, Ashley A. 2012. "The Social Context of Online News: How Incivility in Online Comments Impacts Public Perceptions of and Public Engagement with Science." Doctoral Dissertation. Department of Mass Communications. University of Wisconsin - Madison. Madison, WI.

3. ‡Benn, Troy M. 2009. "The Release of Engineered Nanomaterials from Commercial Product." Doctoral Dissertation. Civil and Environmental Engineering. Arizona State University. Tempe, AZ.

4. ‡Bhaskarabhatla, Ajay S. 2006. "Nanotechnology Enterprise in the United States: Structure and Location." Doctoral Dissertation. School of Public Policy. Georgia Institute of Technology. Atlanta, GA.

5. ‡Brants, Tanner. 2009. "Undergraduate Honors Thesis." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.

6. ‡Burdis, Connie M. 2008. "Nanotechnology and Electricitrees: A Strategic Plan for a Future-Oriented Technology and Product." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

7. Cacciatore, Michael A. 2013. "Differentiating the Applicability of Constructs from their Accessibility: Returning to a Narrow Conceptualization of Framing Effects in Communication Research." Doctoral Dissertation. Department of Mass Communications. University of Wisconsin - Madison. Madison, WI.

8. Choi, Joshua. 2007. "miRNA Expression Analysis in Aligadendroliama with and without 1p/19e Deletions." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

9. Conley, Shannon. 2007. "Voting Rights Act of 1965 Renewal: The Official Congressional Report on Voting Rights in Arizona (1982-2006)." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

10. ‡Davis, Robert W. 2007. "Nanotechnology in Society: Stakeholder Analysis and Nanotechnology Stakeholders." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

11. Edwards, David. 2011. "Elderly and the E-Health Barrier." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

12. Egnatios, Tara. 2008. "Myspace: Ultimate Authorship of the Youniverse." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

13. ‡Finney, Sharyn. 2007. "Multinational Comparative Analysis of Nanotechnology Research: 1990 to 2005 Knowledge Flow Assessment." Undergraduate Thesis. Georgia Institute of Technology. Atlanta, GA.

14. ‡Fisher, Erik. 2006. "Midstream Modulation: Integrating Societal Considerations Into and During Nanotechnology Research and Development: A Case Study in Implementing U.S. Federal Legislation." Doctoral Dissertation. Environmental Sciences. University of Colorado. Boulder, CO.

15. ‡Flipse, Steven M. 2013. "Enhancing Socially Responsible Innovation in Industry: Practical Use for Considerations of Social and Ethical Aspects of Industrial Life Science & Technology." Doctoral Dissertation. Technical University of Delft. Delft, The Netherlands.

16. ‡Fremling, Alicia. 2008. "SCIO: An Innovative Health Product that Uses Nanotechnology to Monitor for Cancer." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

17. Fu, Jinglin. 2010. "Exploring Peptide Space for Enzyme Modulation." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

18. Gallo, Jason. 2008. "Speaking of Science: The Role of the National Science Foundation in the Development of the United States Information Infrastructure." Doctoral Dissertation. Media, Technology and Society. Northwestern University. Evanston, IL.

19. Hall, Hannah. 2011. "Nanotechnology Applications in Urban Sustainability: An Innovative Solution to Electronic Waste Management." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.

20. ‡Hays, Sean. 2009. "A Genealogical Examination and Grounded Theory of the Role of Human Enhancement Technology in American Political Culture." Doctoral Dissertation. School of Politics and Global Affairs. Arizona State University. Tempe, AZ.

21. ‡Ho, Shirley **S.** 2008. "Value Predispositions, Communication, and Attitudes Toward Nanotechnology: The Interplay of Public and Experts." Doctoral Dissertation. Department of Philosophy. University of Wisconsin. Madison, WI.

22. ‡ Hu, Qian. 2011. "Fostering Collaboration through IT Tools and Experimental Study of Public Deliberation on Water Sustainability." Doctoral Dissertation. Public Affairs. Arizona State University. Tempe, AZ.

23. Jolley, Craig C. 2007. "Structure and Dynamics in Photosystem I." Doctoral Dissertation. Physics. Arizona State University. Tempe, AZ.

24. Kibel, Ashley A. 2010. "Instrumentation for Molecular Electronics Device Research." Doctoral Dissertation. Physics. Arizona State University. Tempe, AZ.

25. Lappe, Jason. 2009. "Photoreactivation and Positive Cell Selection for the Directed Evolution of Proteins." Doctoral Dissertation. Chemistry and Biochemistry. Arizona State University. Tempe, AZ.

26. ‡Lee, Caroline. 2009. "Innovation in Nanotechnology Services and Products: Strategic Marketing Plan." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

27. Lepkowski, William. 2010. "Optimizing the Design of Partially and Fully Depleted MESFETs for Low Dropout Regulators." Doctoral Dissertation. Electrical Engineering. Arizona State University. Tempe, AZ.

28. ‡Leung, Ricky. 2007. "Doing Nanotechnology in 21 Century China." Doctoral Dissertation. Sociology. University of Wisconsin. Madison, WI.

29. ‡Liang, Xuan. In review. 2014. "Title TBD." Doctoral Dissertation. Mass Communications. University of Wisconsin - Madison. Madison, WI.

30. ‡Lidberg, Shannon. 2008. "Examining Potential Futures: A Designers Toolbox for Identifying Potential Social and Cultural Implications." Master's Thesis. School of Design. Arizona State University. Tempe, AZ.

31. ‡Lohmeier, Stephanie. 2008. "Innovation Space: Nanotechnology for Human Health." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

32. ‡Lougee, Michelle. 2009. "Bridging Technology and Environment to Provide Shelter for Natural Disaster Victims." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.

33. ‡Lowder, Jessica. 2008. "Creating Sustainable Solutions with Nanotechnology, Energy, and Equity for Natural Disaster Victims." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.

34. ‡Lucivero, Federica. 2012. "Too Good to be True? Appraising Expectations for Ethical Technology Assessment." Doctoral Dissertation. Technical University of Delft. Delft, The Netherlands.

35. ‡Lull, Madeline. 2008. "Innovation Space Strategic Marketing Plan for Braille PDA." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

36. Maricle, Genevieve. 2008. "Shaping Science: How to Turn Science Studies into Science Action." Doctoral Dissertation. Environmental Studies. University of Colorado. Boulder, CO.

37. ‡McIntosh, Daniel. 2008. "Integrated New Product Development for Nanotechnology." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

38. ‡Mellinger, Michelle. 2011. "Innovation Space and The Center for Nanotechnology in Society: Creating an Educational Energy Harvesting Playground." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.

39. ‡Milford, Richard. 2008. "A Dialog on Nanotechnology and Religion: New Methods in Public Engagement." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

40. Panaretos, Anastasios. 2007. "A Discrete Time-Domain Electromagnetics Formulation with Minimized Numerical Artifacts." Doctoral Dissertation. Electrical Engineering. Arizona State University. Tempe, AZ.

41. ‡Panjwani, Azra. 2007. "The Psychological Impact of Mass Surveillance on Society: A Quantitative Approach." Master’s Thesis. Department of Mathematics. Arizona State University. Tempe, AZ.

42. Philbrick, Mark. 2010. "Operationalizing Anticipatory Governance: Steering Emerging Technologies Towards Sustainability." Doctoral Dissertation. Graduate Division. University of California, Berkeley. Berkeley, CA.

43. Pirtle, Zach. 2007. "Democratizing Nanotechnology: Intersecting the Philosophy of Science with Science Policy." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

44. ‡Reed, Jaron. 2010. "A Geospatial Analysis of Fast-Food Outlets and Demographic Variables in Phoenix, AZ: The Political Economy of Food." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

45. ‡Rogers, Lucas. 2010. "Fire Into Ice: Refrigeration Through Waste Heat in Ghanu." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

46. ‡ Runge, Kristin. In review. 2014. "Social Science: Investigating the Effects of Interpersonal Networks on Perceptions of Emerging Technologies." Doctoral Dissertation. Mass Communications. University of Wisconsin-Madison. Madison, WI.

47. ‡Sandler, Shane. 2011. "Nano-piezoelectrics for Energy Generation." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.

48. ‡Schnell-Vivas, Dusana. 2008. "Innovation Space: Creating Sustainable Solutions with Nanotechnology, Energy and Equity for Native Americans Living Off the Electricity Grid." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.

49. Schuurbiers, Daan. 2009. "Social Responsibility in Scientific Practice." Doctoral Dissertation. Department of Biotechnology. Delft Technical University. Delft, The Netherlands.

50. ‡Shaw, Timothy. 2007. "An Innovation Space Addendum: An Analysis and Critique of the Dialog Design, with the Presentation of Alternate Designs and Implications." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

51. ‡Shih, Tsung-Jen. 2009. "Public Opinion and Nanotechnology: Linking Psychological and Cultural Factors in Constructing an Integrated Theory of Public Understanding of Science." Doctoral Dissertation. School of Journalism and Mass Communication. University of Wisconsin. Madison, WI.

52. ‡Silverman, Arielle M. 2007. "Healing the Blind? Perspectives of Blind Persons on Methods to Restore Sight." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

53. Spadola, Quinn Acelia. 2008. "Novel Approaches to DNA Sequencing." Doctoral Dissertation. Department of Physics. Arizona State University. Tempe, AZ.

54. Stubbings, Maria. 2012. "Media Portrayal of Gene Patents: Overall and Thematic Coverage." Master’s Thesis. Life Sciences Communication. University of Wisconsin - Madison. Madison, WI.

55. ‡Tang, Li. 2010. "U.S.-China Scientific Collaboration and the Role of Knowledge Moderation in Nanotechnology Development." Doctoral Dissertation. School of Public Policy. Georgia Institute of Technology. Atlanta, GA.

56. ‡Tassiello, Lauren. 2009. "Undergraduate Honors Thesis." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.

57. Tosi, Justin. 2007. "Hobbe's Reply to the Foole: Obligation and Personal Identity." Graduate Thesis. Political Science. Arizona State University. Tempe, AZ.

58. Tufail, Yusuf Z. 2011. "Development of a Neurostimulation Method Using Pulsed Ultrasound." Doctoral Dissertation. Biology. Arizona State University. Tempe, AZ.

59. ‡Valdivia, Walter. 2011. "Equity Considerations in the Assessment of the Bayh-Dole Act." Doctoral Dissertation. Public Administration. Arizona State University. Tempe, AZ.

60. Van Merkerk, Rutger. 2008. "Intervening in Emerging Nanotechnologies: A CTA of Lab-on-a-chip Technology." Doctoral Dissertation. Innovation & Environmental Sciences. University of Twente. Enschede, The Netherlands.

61. ‡Verdiani, Jennifer. 2008. "Undergraduate Honors Thesis." Undergraduate Thesis. Innovation Space. Arizona State University. Tempe, AZ.

62. ‡Wang, Jue. 2007. "Resource Spillover from University to High Tech Industry: Evidence from New Nanotechnology Based Firms in the U.S." Doctoral Dissertation. School of Public Policy. Georgia Institute of Technology. Atlanta, GA.

63. ‡Watkins, Jennifer. 2008. "Altruism in Community Healthcare by Medical Professionals." Graduate Thesis. Biochemistry. Arizona State University. Tempe, AZ.

64. Williams, Berea. 2010. "Designing Recognition Elements Based on DNA Scaffolds." Doctoral Dissertation. Chemistry. Arizona State University. Tempe, AZ.

65. ‡Wu, Ke. 2010. "Pedagogical Approach Towards Socially and Economically Disadvantaged Children: An Analysis of Education-Based Non-Governmental Organizations Around the World." Undergraduate Thesis. Barrett Honors College. Arizona State University. Tempe, AZ.

66. Zhang, Jinglei. 2010. "Evolving Functional Peptides by mRNA Display." Doctoral Dissertation. Biochemistry. Arizona State University. Tempe, AZ.

67. Zhu, Qin. 2011. "Engineering Ethics Studies: From the Perspective of Practical Effectiveness." Doctoral Dissertation. Dalian University of Technology. Dalian, China.

Presentations

1. Akin, Heather, Sara K. Yeo, **Dietram A. Scheufele**, **Dominique E. Brossard** and **Michael A. Xenos**. May 2014. "The Spillover Heuristic? How the GMO Labeling Debate Affects Information Processing of Nanotechnology." Presentation. Annual Convention of the International Communication Association (ICA). Seattle, WA.

2. **Allenby, Braden**. August, 2006. "Schumpeters Next Wave: Convergence of Nanotechnology, Biotechnology, Information Science, and Cognitive Science." Chaired and contributed to the session. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.

3. **Allenby, Braden** and **Peter de Marneffe**. April 19, 2013. "Privacy in the Nano City: Humans and Nano-enabled Communication Technologies." Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.

4. Anbar, Ariel and Michael E. Smith. February 19, 2010. "The End of Earth: If Not in 2010, Then When." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

5. Anderson, Ashley A., **Dietram A. Scheufele** and **Dominique E. Brossard**. May, 2010. "Trust in Scientists: The Role of Media in Establishing Trust in Sources of Information about Nanotechnology." Presentation. Annual Convention of the World Association for Public Opinion Research, Chicago, IL.

6. Anderson, Ashley A., **Dominique E. Brossard**, **Dietram A. Scheufele** and **Michael A. Xenos**. March, 2012. "Parole Toxique? Comment L'incivilite "En Ligne" Peut Miner Les Perceptions de la Credibilite des Medias." Texte Presente au Colloque International "Com. L'Information et la Communication dans Les Enjeux Contemporains de la "Mondailisation, Co-Organise par ICA, GERIICO et la SFSIC, Roubaix, France.

7. Anderson, Ashley A., **Michael A. Xenos**, **Dominique E. Brossard** and **Dietram A. Scheufele**. August, 2012. "Caustic Comments: Measuring Incivility in Online Comments and Testing its Effects on Political Participation." Paper Presentation. The Annual Convention of the Association for Education in Journalism and Mass Communication, Chicago, IL.

8. Arora, Sanjay. May, 2012. "Website Indicators for the Strategic Management of Emerging Technologies." Poster Session. International Conference on Innovative Methods for Innovation Management and Policy, Beijing, China.

9. Arora, Sanjay, et al. February, 2012. "Commercialization of New and Emerging Technologies: A Cross Country Comparison of Graphene Firms." Poster Session. Georgia Tech Research and Innovation Conference, Atlanta, GA.

10. Arora, Sanjay, **Alan L. Porter**, **Jan Youtie** and **Philip Shapira**. 2012. "Capturing New Developments in an Emerging Technology: An Updated Search Strategy for Identifying Nanotechnology Research Output." Presentation. Global Tech Mining Conference, Montreal.

11. Arora, Sanjay, Rider W. Foley, P. Shapiro and **Arnim Wiek**. November, 2011. "Nanotechnology in Building Construction - an Industry Study of Innovation." Poster Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

12. **Askland, Andrew** and **James Elser**. October 15, 2010. "A Weak Link: Phosphorous Scarcity and Our Food Chain." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

13. **Barben, Daniel**. July 18, 2009. "Was ist "neu" an neuen Technologien? Die vergangene und gegenwaertige Zukunft der Biotechnologie in soziologischer Perspektive." Talk. Deutsches Museum, Neue Technologien im Spannungsfeld von Wissenschaft, Politik, Oeffentlichkeit und Wirtschaft, Munich, Germany.

14. **Barben, Daniel**. June 05, 2009. "Reflexive Governance toward Sustainable Development: Combining Deliberation, Anticipation, and Transformation." Talk. 1st European Conference on Sustainability Transitions: Dynamics and Governance of Transitions to Sustainability, Amsterdam, The Netherlands.

15. **Barben, Daniel**. May 23, 2009. "Antizipatorische Governance von Zukunftstechnologien: Kapazitaetsbildung im Spannungsfeld von Technikgestaltung und Akzeptanzpolitik." Talk. German Political Science Association (DVPW), Section on Politics und Technology, Berlin University of Technology: Governance von Zukunftstechnologien, Berlin, Germany.

16. **Barben, Daniel**. June 16, 2008. "Biotechnologieregime im Gesellschaftsvergleich. Zur Soziologie neuer Wissenschaft und Technik." Guest lecture. Institute for Science and Technology Studies, University of Bielefeld, Bielefeld, Germany.

17. **Barben, Daniel**. April 16, 2007. "Innovation Regimes and Institutional Reflexivity in Comparative Perspective." Talk. Swiss Federal Institute of Technology, EAWAG: Innovation, Institutions and Path Dependency: The Management of Variation and Diversity in Innovation Systems, Zurich, Switzerland.

18. Barben, Daniel. August, 2006. "Visions of Nanotechnology in a Divided World: The Acceptance Politics of a Future Key Technology." Panel Series on Social Studies of Nanotechnology. Conference of the European Association for the Study of Science Technology (EASST), University of Lausanne, Lausanne, Switzerland.

19. Barben, Daniel and **Frank Laird**. June, 2006. "Acceptance Politics of Contested Technologies: A Comparison between Nuclear Power, Biotechnology, and Nanotechnology." Annual Meeting of the Science and Democracy Network, Kennedy School of Government, Harvard University, Cambridge, MA.

20. **Barker, Anna** and Denise Meridith. May 17, 2013. "Healing in the Nano City: Designing Equity into Transformative Healthcare." Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.

21. Beaute, Stacie. November 21, 2013. "Citizen Science! Bridging the Gap: Meeting Challenges, Building Capacity." Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.

22. Benn, Troy M. November, 2008. "The Transport of Nanomaterials in Various Environments." Workshop on Nanotechnology, Equity and Equality. Center for Nanotechnology in Society at Arizona State University and Project Resultar at the Technology Policy and Assessment Center, Georgia Institute of Technology, Tempe, AZ.

23. Benn, Troy M., **Jameson Wetmore** and Ira Bennett. July, 2008. "Nanosilver from Socks into Wastewater." Experiment demonstration. Arizona Science Center, Triple Play Days, Phoenix, AZ.

24. **Bennett, Ira**. March, 2010. "Visions for Future Innovation and Implications." Presentation. Atlanta Transatlantic Workshop on Nanotechnology Innovation and Policy. Georgia Tech, Atlanta, GA.

25. **Bennett, Ira**. February, 2010. "Lessons of Engagement: Learning from Policymakers and the Public." Presentation. Annual Meeting of the American Association for the Advancement of Science, San Diego, CA.

26. **Bennett, Ira**. March, 2009. "Anticipatory Governance of Emerging Nanotechnologies." American Chemical Society, Salt Lake City, UT.

27. **Bennett, Ira**. 2009. "Thinking Longer Term about Technologies: is there Value in Science Fiction-Inspired Appraoches to Constructing Futures." Presentation. Publics and Emerging Technologies, Banff, Canada.

28. Bennett, Ira. 2007. "Frozen in Time: A Tour of Alcor Life Extension Foundation." Tour. Spirit of the Senses, Scottsdale, AZ.

29. Bennett, Ira. 2007. "What if I Dont Want My Advisors Job: Careers Outside (gasp) the Academic Laboratory." Talk. Association of Women in Science Central Arizona Chapter, Tempe, AZ.

30. Bennett, Ira. 2006. "Emerging Technologies." Talk. Spirit of the Senses, Phoenix, AZ.

31. **Bennett, Ira** and **Jameson Wetmore**. December 18, 2012. "Exploring Nanotechnology around the World." Presentation. Books and Beakers, Yard Gnome Bookstore, Phoenix, AZ.

32. **Bennett, Ira** and **Jameson Wetmore**. September 12, 2011. "Science and Regulatory Challenges of Commercial Nanoparticles." Presentation. Science Cafe', Berkeley, CA.

33. Bennett, Ira and Tim Boyd. November 16, 2012. "Equity in the Nano City: How Can Nanotechnology Empower Equitable Water Distribution?" Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

34. Bernstein, Michael J., Rider W. Foley and **Ira Bennett**. Accepted, 2014. "Guidelines for Solutions to Socio-technical Problems." Presentation. STGlobal Consortium. Washington, DC, April 4-5.

35. Binder, Andrew R., Michael A. Cacciatore, **Dietram A. Scheufele**, Bret R. Shaw and **Elizabeth A. Corley**. August, 2010. "Measuring Perceptions of Emerging Technologies: Errors in Survey Self-Reports and their Potential Impact on Communication of Public Opinion Toward Science." Presentation. Annual Convention of the Association for Education Journalism and Mass Communication, Denver, CO.

36. **Bowditch, Rachel**, Matt Watkins and **Karin D. Ellison**. October 16, 2009. "Bone Portraits: Scenes from a Play about the Invention of the X-Ray." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

37. **Brossard, Dominique E.**, Eunkyung Kim and **Dietram A. Scheufele**. May, 2007. "The Politics of Nanotech: Communication and Opinion Formation about Scientific Issues and Policies." Paper presentation. Annual convention of the International Communication Association, San Francisco, CA.

38. **Brune, Daniel C.** and **David Conz**. October 29, 2006. "Alternative Fuels: What We Can Do (and Cant Do) to Make Our Skies Blue Again." Public talk. CNS-ASU Science Cafe, Changing Hands Bookstore, Tempe, AZ.

39. **Cacciator, Michael A.**, **Dietram A. Scheufele**, **Dominique E. Brossard** and **Michael A. Xenos**. May 2014. "Nanotechnology, Synthetic Biology, and Nuclear Power: Understanding the Social Media Discourse of Science Issues." Presentation. Annual conference of the International Communication Association. Seattle, WA.

40. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. 2013. "Explaining Attitudes toward Nanotechnology: The Interaction between Risk Perceptions and Regulatory Trust on Public Support." Presentation. Paper presented at the Annual Convention of the Society for the Study of Nanoscience and Emerging Technologies. Boston, MA.

41. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. December, 2012. "Communicating Risks about Science: Exploring the Interactive Effects of Cognitive Schema and

Journalist News Frames on Public Risk Perceptions." Paper Presentation. The Annual Convention of the Society for Risk Analysis, San Francisco, CA.

42. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. August, 2011. "Institutional Trust, Risk Information Processing and Support for an Emerging Technology." Paper Presentation. Annual Convention of the Association for Education in Journalism & Mass Communication, St. Louis, MO.

43. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. January, 2011. "Re-examining Science Knowledge Acquisition: Exploring the Internet as a Leveler of Education-Based Nanotechnology Knowledge Gaps." Paper Presentation. All Hands Meeting for the Center for Nanotechnology in Society at ASU, Tempe, AZ.

44. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. August, 2010. "A New (Methodological) Look at Science Knowledge Gaps: Merging Trend-Data to Examine Widening Nanotechnology Knowledge Gaps." Presentation. Annual Convention of the Association for Education in Journalism and Mass Communication, Denver, CO.

45. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. May, 2010. "The Emergence of Nanotechnology Knowledge Gaps: Differences in Knowledge across Education Levels and Media Exposure." Presentation. Annual Convention of the American Association for Public Opinion Research, Chicago, IL.

46. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. May, 2010. "From Enabling Technology to Applications: The Evolution of Risk Perceptions about Nanotechnology." Paper Presentation. National Science Foundation Site Visit for the Center for Nanotechnology in Society at ASU, Tempe, AZ.

47. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. November, 2009. "In God we Trust? Exploring the Link between Religiosity and Risk Perceptions in Nanotechnology Attitude Formation." Presentation. Annual Convention of the Midwest Association for Public Opinion Research, Chicago, IL.

48. Cacciatore, Michael A., **Dietram A. Scheufele** and **Elizabeth A. Corley**. August, 2009. "It depends on what you have heard: Exploring the Link between Risk Perception and Attitudes across different Applications of Nanotechnology." Presentation. Annual Convention of the Association for Education in Journalism and Mass Communication, Boston, MA.

49. Cacciatore, Michael A., **Dietram A. Scheufele**, **Elizabeth A. Corley**, **Philip Shapira** and **Jan Youtie**. April, 2012. "Practicing what they preach? Comparing the Self-Reported Attitudes of Nanoscientists with their EHS Publication Records." Paper Presentation. 12th International Public Communication of Science and Technology Conference, Florence, Italy.

50. Cacciatore, Michael A., **Dietram A. Scheufele**, **Elizabeth A. Corley**, **Philip Shapira** and **Jan Youtie**. December, 2011. "Do Leading U.S. Nanoscientists Practice what they preach? Using Publication Records as a Predictor of Scientists' Attitutudes toward the Regulation and Communication of Nanoscience." Paper Presentation. Annual Convention of the Society for Risk Analysis, Charleston, SC.

51. Cacciatore, Michael A., **Dietram A. Scheufele**, Sarah K. Yeo, Michael A. Xenos, Doo-Hun Choi, **Dominique E. Brossard**, and **Elizabeth A. Corley**. June 2013. "Misperceptions in Polarized Politics: The Role of Knowledge, Religiosity and Media." Presentation. Annual Convention of the International Communication Association. London, United Kingdom.

52. Cacciatore, Michael A., Doo-Hun Choi, **Dietram A. Scheufele** and **Elizabeth A. Corley**. November, 2011. "Unpacking the Relationships between Religiosity, Deference to Scientific Authority and Support for Nanotechnology: A Structural Equation Modeling Approach." Paper Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

53. Cacciatore, Michael A., Doo-Hun Choi, **Dietram A. Scheufele** and **Elizabeth A. Corley**. August, 2011. "Support for Emerging Technologies: Disentagling the Predispositional, Affective and Cognitive Pathways." Paper Presentation. Annual Convention of the Association for Education in Journalism & Mass Communication, St. Louis, MO.

54. Cacciatore, Michael A., Doo-Hun Choi, **Dietram A. Scheufele** and **Elizabeth A. Corley**. Under review, "Religiosity, Deference to Scientific Authority and Support for Nanotechnology: A Structural Equation Modeling Approach." Paper submission. Annual meeting of the Association for Education in Journalism and Mass Communication, St. Louis, MO.

55. Cacciatore, Michael A., Sara K. Yeo, **Dominique E. Brossard**, **Dietram A. Scheufele**, Kristin K. Runge, Leona Yi-Fan Su, Elizabeth A. Corley. November, 2012. "Partisan Amplification of Risk: American Perceptions of Nuclear Energy Risk in the Wake of the Fukushima Daiichi Disaster." Paper Presentation. The Annual Convention of the Midwest Associate for Public Opinion, Chicago, IL.

56. Cacciatore, Michael A., Sara K. Yeo**, Dominique E. Brossard**, **Dietram A. Scheufele**, Kristin K. Runge, Leona Yi-Fan Su, Elizabeth A. Corley. 2013. "Partisan Amplification of Nuclear Energy Risk in the Wake of the Fukushima Daiichi Disaster." Paper Presentation. The Annual Conference of the Association for Education in Journalism and Mass Communication, Washington, DC.

57. Cacciatore, Michael A., Sarah K. Yeo, L. Y-F Su, Doo-Hun Choi, Michael A. Xenos, **Dietram A. Scheufele**, et al. 2012. "Is Facebook Making us Dumber? Exploring Social Media use as a Predictor of Political Knowledge." Paper Presentation. Annual Convention of the Association for Education in Journalism and Mass Communication, Chicago, IL.

58. Calleja, Antonio and **Erik Fisher**. 2009. "Dialogues from the Lab: Contemporary Maieutics for Socio-Technical Inquiry." Presentation. Converging Technologies, Changing Societies. Proceedings for Philosophy and Technology. University of Twente, the Netherlands.

59. Carley, Stephen. November 16, 2012. "Valuing Government Collaborator Inovolvement in University-Industry Partnerships." Doctoral Research on Nanotechnology Triple Helix C. Workshop on Original Policy Research, Georgia Institute of Technology School of Public Policy, Atlanta, GA.

60. Carley, Stephen. October 19, 2007. ""Nano Research Profiling on Demand" on nanotechnology datamining techniques and applications." Poster Presentation. Atlanta Conference on Science, Technology, and Innovation Policy, Atlanta, GA.

61. Carley, Stephen and **Alan L. Porter**. November 05, 2011. "A New Measure of Knowledge Diffusion." Session. Measuring Research Interdisciplinarity and Knowledge Diffusion, American Evaluation Association.

62. Carley, Stephen, **Alan L. Porter** and Li Tang. November, 2011. "Testing for Nano EHS Convergence at the State Level." Poster Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

63. **Carlson, Marilyn P.** April, 2006. "An Overview of a Project to Improve Mathematics and Science Education for a Technical Society: Cognitive Research Informs Curriculum Development and Instructional Support." Presentation. Materials Research Society Symposium on Education in Nanoscience and Engineering, San Francisco, CA.

64. Castillo, Rafael. September 26-28, 2013. "Impact of Nanotechnology- infused Industries on Employment and Wage Inequality in the United States." Presentation. Atlanta Conference on Science and Innovation Policy. School of Public Policy. Georgia Institute of Technology. Atlanta, GA.

65. Cavalier, Darlene. January 16, 2014. "Citizen Science! New Technologies, New Audiences." Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.

66. Choi, Doo-Hun, Anthony D. Dudo and **Dietram A. Scheufele**. November, 2011. "U.S. Newspaper Coverage of Neuroscience Nanotechnology." Paper Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

67. Choi, Doo-Hun, Anthony D. Dudo and **Dietram A. Scheufele**. January, 2011. "Food Nanotechnology in the News: Coverage Patterns and Thematic Emphases during the Last Decade." Paper Presentation. All Hands Meeting for the Center for Nanotechnology in Society at ASU, Tempe, AZ.

68. Choi, Doo-Hun, Michael A. Cacciatore, **Dietram A. Scheufele** and **Elizabeth A. Corley**. November, 2011. "Nanotechnology and Talk: Differential Gains Model for an Emerging Technology." Paper Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

69. Choi, Doo-Hun, Michael A. Cacciatore, **Dietram A. Scheufele** and **Elizabeth A. Corley**. August, 2011. "Connecting Interpersonal Discussion and the Internet: How Interpersonal Discussion Moderates the Effect of the Internet on being informed about Nanotechnology." Paper Presentation. Annual Convention of the Association for Education in Journalism & Mass Communication, St. Louis, MO.

70. Choi, Doo-Hun, Michael A. Cacciatore, **Dominique E. Brossard** and **Michael A. Xenos**. May, 2012. "Disentangling Public Opinion of Nanotechnology: Exploring the Interactive Effects of News Media, Values, and Information Processing on Opinion Formation." Paper Presentation. Annual Convention of the American Association for Public Opinion Research, Orlando, FL.

71. Choi, Doo-Hun, Michael A. Cacciatore, **Michael A. Xenos**, **Dietram A. Scheufele** and **Dominique E. Brossard**. May, 2012. "The Digital Producation Gap: The Role of News Media Use, Information Processing, and Opinion Expression." Paper Presentation. Annual Conference of the International Communication Association, Phoenix, AZ.

72. Choi, Doo-Hun, Michael A. Cacciatore, **Michael A. Xenos**, **Dietram A. Scheufele**, **Dominique E. Brossard** and **Elizabeth A. Corley**. 2013, "How do Individuals Develop Attitude Extremity in the New Media Environment? The Interplay between the Internet, Schemas, and Information Seeking." Presentation. The Annual Conference for the Association for Education in Journalism and Mass Communication, Washington, DC.

73. Choi, Doo-Hun, Michael A. Cacciatore, Youngjae Kim, **Dietram A. Scheufele** and **Dominique E. Brossard**. May, 2013. "Issue Publics in Nanotechnology in the New Media Environment." Paper Presentation. The Annual Convention of the American Association for Public Opinion Research, Boston, MA.

74. **Cobb, Michael D.** March, 2009. "Public Engagement: National Citizens Technology Forum." Presentation. Nanotechnology and Public: Data for Decision Makers briefing to the U.S. Congressional Nanotechnology Caucus, Washington, DC.

75. **Cobb, Michael D.** January, 2009. "U.S. Public Opinion about Nanotechnologies used for Human Enhancements: Consensus Conferences, Deliberation and Framing Effects on Risk Perceptions." Communicating Emerging Technologies II: Risks and Uncertainties, University of Nevada, Las Vegas, NV.

76. **Cobb, Michael D.** and **Patrick Hamlett**. June 27, 2008. "The First National Citizens Technology Forum on Converging Technologies and Human Enhancement: Adapting the Danish Consensus Conference in the USA." Paper presentation. Tenth International Conference on Public Communication of Science and Technology (PCST-10), Malmo, Sweden.

77. Coleman, Grisha and Aaron Golub. October 19, 2012. "Moving in the Nano City: What Will the Impact Be." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

78. Conley, Shannon. April, 2009. "Nanotechnology Policy in Cambridge, Massachusetts: Local Reflexive Governance." Presentation. Midwest Political Science Association Conference, Chicago, IL.

79. Conley, Shannon. November, 2008. "Regulating Life: The Regulation of Assisted Reproduction in Canada and the UK." Center for the Study of Institutional Diversity Weekly Seminar Series, Arizona State University, Tempe, AZ.

80. **Conz, David**. October 12, 2007. "Reflexivity Assessment of STS Engagement of Nanotechnology." Presentation. Annual Meeting of the Society for Social Studies of Science, Montreal, Canada.

81. **Corley, Elizabeth A.** 2013. "The Science of Science Communication II: Creating Collaborations for Communication about Nanotechnology Regulation." Presentation. The National Academy of Sciences. Washington, DC.

82. **Corley, Elizabeth A.** April, 2011. "Soft Law Mechanisms for Nanotechnology Governance." Paper Presentation. Workshop on Soft Law Oversight Mechanisms for Nanotechnology, Scottsdale, AZ.

83. **Corley, Elizabeth A.** March, 2011. "Public Attitudes about Nanotechnology Regulation." Paper Presentation. Biggest Issues for the Smallest Stuff: Regulation and Risk Management of Nanotechnology, Phoenix, AZ.

84. **Corley, Elizabeth A.** March, 2010. "Public Attitudes about Nanotechnology." Paper Presentation. NNI Capstone Workshop: Risk Management Methods & Societal, Ethical, and Legal Implications of Nanotechnology, Washington, DC.

85. **Corley, Elizabeth A.** 2010. "Expert and Public Perceptions about Nanotechnology Risks, Benefits and Regulations." Paper Presentation. David Lincoln Lecture Series, Paradise Valley, AZ.

86. **Corley, Elizabeth A.** 2009. "Public and Nano-Scientist Perceptions about Nanotechnology. Workshop on Emerging Technologies, Military Operations and National Security." Presentation. Case Western University, Cleveland, OH.

87. **Corley, Elizabeth A.** 2009. "Eliciting Public Understanding of and Values toward Emerging Technologies through Opinion Polls." Presentation. Society for the Study of Nanoscience and Emerging Technologies, Seattle, WA.

88. **Corley, Elizabeth A.** July, 2008. "Societal Dimensions of Nanotechnology: An Exploration of Public and Scientist Perceptions." Invited presentation. Young Scientists Nanotechnology Workshop, French Embassy, Washington, DC.

89. **Corley, Elizabeth A.** April, 2008. "Scientists and the Public: Comparing Views on Nanotechnology Risks and Regulations." Talk. CSPO Enlightening Lunch, Arizona State University, Tempe, AZ.

90. **Corley, Elizabeth A.** 2008. "Scientist and the Public Risk Perceptions about Nanotechnology." Societal Implications of Nanotechnology 2008 Principal Investigators Meeting at National Science Foundation, Arlington, VA.

91. **Corley, Elizabeth A.** and Dietram A. Scheufele. February, 2008. "A Comparative Look at Markets, Media, and Emerging Attitudes about Nanotechnology." Presentation. American Association for the Advancement of Science (AAAS) Annual Meeting, Boston, MA.

92. **Corley, Elizabeth A.** and **Dietram A. Scheufele**. November, 2006. "Factors Impacting Public Support of Federal Funding for Nanotechnology." Presentation. 28th Annual Association for Public Policy Analysis and Management Research Conference, Madison, WI.

93. **Corley, Elizabeth A.**, **Dietram A. Scheufele** and Qian Hu. November, 2008. "Exploring Public and Scientist Attitudes About the Risks and Regulation of Nanotechnology Research: What Does the Future Hold for Policy-Making?" Presentation. Annual convention of the Association for Policy Analysis and Management, Los Angeles, CA.

94. **Corley, Elizabeth A.**, **Dietram A. Scheufele**, **Sharon Dunwoody**, **Elliott D. Hillback**, **Tsung-Jen Shih** and **David H. Guston**. October, 2007. "Nanotechnology Attitudes among Scientists and the Public." Presentation. Annual Meeting, Society for Social Studies of Science, Montreal, Canada.

95. **Corley, Elizabeth A.** and **Jan Youtie**. 2009. "Learning to Manage Multi-institutional Multidisciplinary Research Centers: A Case Study the LIFE Center." Paper Presentation. 10th Public Management Research Association Conference.

96. Cortes Lobos, Rodrigo. October, 2012. "Advocacy Groups Participation in the Public U.S. agrifood Nanotechnology Research Agenda." Presentation. Fourth Annual Conference of Society for the Study of Nanoscience and Emerging Technologies, Twente, the Netherlands.

97. Cortes Lobos, Rodrigo. March, 2012. "Can Nanotechnology research contribute to Sustainable Development of the US Agri-food sector?" Presentation. S&T Global PhD Conference, Washington, DC.

98. Cortes Lobos, Rodrigo. November, 2011. "The Chilean Nanotechnology Sector: Catching up or falling behind." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

99. Cortes Lobos, Rodrigo. September, 2011. "Nanotechnology and the Millennium Development Goals: Energy, Water, and Agri-food." Presentation. Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

100. Cortes Lobos, Rodrigo. May, 2011. "Can Agri-food Nanotechnology contribute to achieve the Millennium Development Goals in Developing Countries?" Presentation. 7th International Globelics Academy, Tampere, Finland.

101. **Cozzens, Susan**. March, 2013. "Invited Lecture." Tshwane University of Technology, South Africa.

102. **Cozzens, Susan**. October, 2012. "Equity, Equality, and National Contexts: The U.S. and South Africa as Environments for Nanotechnologies." Presentation. Fourth Annual Conference of Society for the Study of Nanoscience and Emerging Technologies, Twente, the Netherlands.

103. **Cozzens, Susan**. April 03, 2012. "Keynote Lecture." NanoAfrica Conference, Bleoemfontein, South Africa.

104. **Cozzens, Susan**. April, 2012. "Environmental Health and Safety in Nanotechnology: A Critical Interface with the Public." Presentation. NanoAfrica 2012, University of Freestate, South Africa.

105. **Cozzens, Susan**. November, 2011. "Equity, Equality, and Development: A Framework for Analyzing Nanotechnology Potentials." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

106. **Cozzens, Susan**. July, 2011. "Equity, Equality, and Nanotechnology." Presentation. Tshwane University of Technology, Pretoria, South Africa.

107. **Cozzens, Susan**. January, 2011. "TRC 1 - Equity and Responsibility Program Assessment." Presentation. Center for Nanotechnology in Society at ASU, Tempe, AZ.

108. **Cozzens, Susan**. December 03, 2010. "Knowledge to Policy: Contributing to the Measurement of Social, Health, and Environmental Benefits." Presentation. Science Measurement Workshop presented by the Office of Science and Technology Policy, Washington, DC.

109. **Cozzens, Susan**. July, 2010. "Nanotechnology and Society." Presentation. REU students at GA Tech NNIN Node, Atlanta, GA.

110. **Cozzens, Susan**, Rodrigo Cortes Lobos, Diran Soumonni and Thomas Woodson. November, 2011. "Nanotechnology and the Millennium Development Goals: Energy, Water, and Agri-food." Presentation. Globelics, Argentina.

111. Cunningham, S. W. and **Alan L. Porter**. 2011. "Bibliometric Discovery of Innovation and Commercialization Pathways in Nanotechnology." Presentation. 2011 Proceedings of Technology Management for Emerging Technologies (PICMET). Portland, OR.

112. **Dalrymple, Kajsa E.**, Amy B. Becker, **Dominique E. Brossard, Dietram A. Scheufele** and Al C. Gunther. August, 2009. "Getting Citizens Involved: How Controversial Science Policy Debates Stimulates Issue Participation during a Political Campaign." Presentation. Annual Convention of the Association for Education in Journalism and Mass Communication, Boston, MA.

113. **Dalrymple, Kajsa E.**, **Dietram A. Scheufele** and **Elizabeth A. Corley**. May, 2009. "Proximity to Experts? Rethinking Operationalizations of Cognitive Outcomes Based on Dual-source Measures." Paper presentation. International Communication Association (Mass Communication Division) Conference, Chicago, IL.

114. Davies, Sarah R. November, 2011. "Knowing and Loving: Pleasure in Public Engagement." Presentation. 4S Annual Meeting, Cleveland, OH.

115. Davies, Sarah R. September, 2011. "Invited Discussant." Inaugural Conference of the Belgian Science, Technology and Society (BSTS) Network, Brussels.

116. Davies, Sarah R. September, 2011. "Deliberating Futures: Pathways, Locales, and Imagery in the Imagination of Technoscientific Change." Paper Presentation. Governing Futures Conference, Vienna.

117. Davies, Sarah R. May 16, 2011. "NanoEthics: Responsibility, Risk, and Responsible Innovation." Presentation to Private Sector audience. Training Session, SESHA (ESH for High Technology) Annual Symposium, Scottsdale, AZ.

118. Davies, Sarah R. December, 2010. "Deliberation beyond Discourse: Experimenting with Science-Society Engagement." Presentation. CSPO Enlightening Lunch, Arizona State University, Tempe, AZ.

119. Davies, Sarah R. November, 2010. "Public Engagement: Genealogies and Reflections." Presentation. Practices of Anticipatory Governance Workshop, Arizona State University, Tempe, AZ.

120. Davies, Sarah R. September, 2010. ""Unethical for them": The Ethical as a Category in Public Talk." Presentation. Annual Meeting of the Society for the Study of Nanoscience and Emerging Technologies, Darmstadt, Germany.

121. Davies, Sarah R. April, 2010. "How we talk when we talk about Nano: Public Discussion of Future Technologies." Presentation. Center for Nanotechnology in Society, University of California Santa Barbara, Santa Barbara, CA.

122. Davies, Sarah R., **Cynthia Selin**, Gretchen Gano and **Angela Pereira**. May, 2011. "Finding Futures." Presentation. Science in a Digital Society, EC-JRC Workshop, Lisbon.

123. Davies, Sarah R. and **Denisa Kera**. February, 2012. "DIY Micro-Governance: Hackerspaces as Science Policy." Presentation. Inaugural Asia Pacific Science Policy Studies Research Conference, Wellington, New Zealand.

124. Davies, Sarah R. and **Noela Invernizzi**. November, 2011. "Nanotechnology and the Private Sector: Innovation, Governance, and Regulation." Panel Organizer. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

125. de Ridder-Vignone, Kathryn. August 2014. "Images as Authoritative Knowledge in Public Engagement with Emerging Technologies." Presentation. Social Studies of Science. Buenos Aires.

126. de Ridder-Vignone, Kathryn. November 2013. "Four Design Principles of Public Engagement." Presentation. Sensing Change: Mapping the Climatic Imaginary Through Art, Science and History Workshop. Chemical Heritage Foundation. Philadelphia, PA.

127. de Ridder-Vignone, Kathryn. October 2013. "The Futurescape City Tours: Material Deliberation as Public Engagement." Presentation. Society for the Study of Nanoscience and Emerging Technologies (S.NET) Annual Conference. Boston, MA.

128. de Ridder-Vignone, Kathryn. October 2013. "The Futurescape City Tours: Material Deliberation as Public Engagement." Presentation. Society for the Social Studies of Science Annual Meeting. San Diego, CA.

129. de Ridder-Vignone, Kathryn. September 10, 2013. "How Material Deliberation Creates More Democratic Governance of Emerging Technologies." Presentation. Enlightening Lunch Series. Arizona State University. Tempe, AZ.

130. de Ridder-Vignone, Kathryn. August-September 2013. "Visual Methods Seminar: Observing and Visualizing Urban Culture by Jon Wagner, Richard Chalfen, Luc Pauwels, and John Grady." Presentation. University of Antwerp Summer School. Belgium.

131. de Ridder-Vignone, Kathryn. September 2013. "Design and the Appropriation of Place – Experimenting with Photography as a Method." Presentation. Visual Methods Seminar: Observing and Visualizing Urban Culture. Belgium.

132. de Ridder-Vignone, Kathryn. July 2013. "Material Deliberation as Public Engagement in the Nanoscale Informal Science Education Network." Presentation. Science in Public 2013: Critical Perspectives on Making Science Public. Nottingham, United Kingdom.

133. de Ridder-Vignone, Kathryn, **Cynthia Selin** and Gretchen Gano. October 8, 2013. "Futurescape City Tours: Incorporating the Temporal, Sensual and Material in Public Engagement with Nanotechnology." Presentation. Science and Its Publics: Exploring Emergent Forms of Public Engagement, Newkirk Center: Promoting Scientific Knowledge in Society's Interest. University of California Irvine.

134. Dudo, Anthony D. May, 2010. "Project Overview: Nanotechnology in the News." Paper Presentation. National Science Foundation Site Visit for the Center for Nanotechnology in Society at ASU, Tempe, AZ.

135. Dudo, Anthony D., **Dominique E. Brossard**, **James Shanahan**, **Dietram A. Scheufele**, Michael Morgan and **Nancy Signorelli**. August, 2009. "Science on Television in the 21st Century: Recent Trends in Portrayals and their Contributions to Public Attitudes toward Science." Presentation. Annual Conference of the Association for Education in Journalism and Mass Communication, Boston, MA.

136. Dudo, Anthony D., Doo-Hun Choi and **Dietram A. Scheufele**. January, 2011. "Food Nanotechnology in the News: Coverage Patterns and Thematic Emphases during the Last Decade." Paper Presentation. All Hands Meeting for the Center for Nanotechnology in Society at ASU, Tempe, AZ.

137. Dudo, Anthony D., **Sharon Dunwoody** and **Dietram A. Scheufele**. August, 2009. "The Emergence of Nano News: Tracking Thematic Trends and Changes in Media Coverage of Nanotechnology." Presentation. Annual Convention of the Association for Education in Journalism & Mass Communication, Boston, MA.

138. Falls, Dee Dee and Adriene Jenik. January 18, 2013. "Learning in the Nano City." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

139. **Fernandez-Ribas, Andrea**. October 03, 2009. "Firms' Global Patent Strategies in an Emerging Technology." Paper presentation. Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

140. **Fernandez-Ribas, Andrea** and **Philip Shapira**. October, 2009. "The Globalization of Innovation in Nanotechnology: Some Empirical Evidence for US, Japanese, and European Firms." Presentation. 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

141. **Fernandez-Ribas, Andrea** and **Philip Shapira**. May, 2008. "Technological Diversity, Scientific Excellence and the Location of Inventive Activities Abroad: The Case of Nanotechnology." Presentation. National Bureau of Economic Research (NBER) Nanobank Conference, Boston, MA.

142. **Fichtner, Aaron**. 2007. "Preliminary Results: The Workforce Needs of Companies Using Nanotechnology in Arizona." Presentation. Nanotechnology 2007 Conference, San Jose, CA.

143. Finn, Edward and Arnim Wiek. September 12, 2012. "Envisioning the Nano City: How Will it Look." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

144. **Fisher, Erik**. February 15, 2014. "Responsible Collaborations in Interdisciplinary Research." Presentation. American Association for the Advancement of Science. Chicago, IL.

145. **Fisher, Erik**. February 11, 2014. "Invited Testimony." Presentation. The Presidential Commission for the Study of Bioethical Issues. Sixteenth meeting. Washington, DC.

146. **Fisher, Erik**. December 16, 2013. "Socio-Technical Collaboration in Science: Building Capacities for Responsible Innovation." Presentation. International Symposium for Responsible Research and Innovation. Osaka University. Japan.

147. **Fisher, Erik**. June 24-27, 2013. "Probing Capacities for Socio-Technical Integration." Presentation. Communities of Integration Track. 4th Annual International Science for Team Science Conference. Northwestern University. Evanston, IL.

148. **Fisher, Erik**. September, 2012. "Exploring the Possibility, Utility, and Meaning of Lab-based Socio-Technical Collaborations." Preentation. Science of Science and Innovation Policy Conference 2012. The National Academy of the Sciences, Washington, DC.

149. Fisher, Erik. June, 2012. "Broader Societal Implications: Long-Term Scenarios, Challenges for Humankind." Presentation. NBIC2: International Study on Converging Technologies for Societal Benefit. The National Science Foundation.

150. Fisher, Erik. April 26, 2012. "Self-Critical Public Science: How to Integrate Creativity and Responsiblity." Presentation. New Tools for Science Policy Seminar. ASU Washington Center, Washington, DC.

151. **Fisher, Erik**. March 22, 2012. "The Code of Conduct for Responsible Nanosciences and Nanotechnologies Research as a Platform for Deliberation." Presentation. Soft Law Oversight Mechanisms for Nanotechnology. Skysong, Arizona State University.

152. **Fisher, Erik**. November, 2011. "Stirring the Governance Capacities of Experts-in-the-Making." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

153. Fisher, Erik. November, 2011. "Lost in the NanoWorld: 10 years of Emergence." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

154. **Fisher, Erik**. June 17, 2011. "Future Regimes of Science, Politics and Convergence Work." Presentation. The Future of Science and Society: A Symposium in Honor of Arie Rip, University of Twente.

155. **Fisher, Erik**. May, 2011. "Responsible Innovation R&D: the US Experience." Presentation. . Franco-British Workshop on Responsible Innovation: From Concepts to Practice. Residence of the French Ambassador, London.

156. **Fisher, Erik**. May, 2011. "STIR Spin-offs: Beyond the Laboratory Engagement Study." Presentation. Institute for Innovation and Governance Studies. University of Twente.

157. **Fisher, Erik**. February 16, 2011. "Workshop Public Agenda: International Network for Responsible Innovation." Workshop organizer and principal investigator. STIR Project Workshop 4, Washington, DC.

158. **Fisher, Erik**. February, 2011. "STIR Project Overview." Presentation. International Network for Responsible Innovation. STIR Project Workshop. Woodrow Wilson International Center for Scholars, Washington, DC.

159. **Fisher, Erik**. December 03, 2010. "Public Value Integration in Science and Innovation Policy Processes." Presentation. Science Measurement Workshop presented by the Office of Science and Technology Policy, Washington, DC.

160. **Fisher, Erik**. October 28, 2010. "Science, Democracy and the Reinvention of the Liberal Arts." Presentation. Lowdenslager Annual Lecture. Western State College, Gunnison, CO.

161. **Fisher, Erik**. October, 2010. "Midstream Modulation and Socio-Technical Integration Research." Presentation. Ethics on the Work Floor: Interdisciplinary Research and Responsible Innovation workshop. Technical University of Delft, Delft, Netherlands.

162. **Fisher, Erik**. October, 2010. "Socio-Technical Integration Research." Presentation. NSF Science of Science and Innovation Policy Workshop: Building a Community of Practice II. American Association for the Advancement of Science, Washington, DC.

163. **Fisher, Erik**. August, 2010. "Integration Outcomes." Presentation. Integration Study Comparisons. STIR Project Workshop. University of Tokyo, Tokyo, Japan.

164. **Fisher, Erik**. June 09, 2010. "Lab-level Socio-technical Integration." Presentation. Genome British Columbia, GSEAC Retreat, Vancouver, Canada.

165. **Fisher, Erik**. June 02, 2010. "Midstream Modulation of Emerging Technology: Probing the Capacity of Research Decisions." Presentation. Research Council of Norway, Oslo, Norway.

166. **Fisher, Erik**. April, 2010. "The Political Ethnography of Lab-Level Bureaucrats: Probing the Capacity of Research Decisions." Presentation. Midwest Political Science Association 68th Annual National Conference, Chicago, IL.

167. **Fisher, Erik**. February 27, 2010. "What is Midstream Modulation?" Presentation. Reflexive Systems Biology Kick-Off Meeting. University of Bergen, Bergen, Norway.

168. **Fisher, Erik**. February 26, 2010. "TA-Trends in the U.S.." Keynote Lecture. TA Workshop: Keeping Pace with T.A. Instituut Samenleving and Technologie. Flemish Parliament, Brussels, Belgium.

169. **Fisher, Erik**. September 08, 2009. "Integration and Reflexivity: Integrating Social Science and Humanisitic Work with Laboratory Research in Emerging Science and Technology." Presentation. S.NET Pre-Conference Workshop: Real-time Technology Assessment and Anticipatory Governance. University of Washington.

170. **Fisher, Erik**. July, 2009. "Inquiry as Intervention." STIR Workshop 2: Inquiry as Intervention, Vatnahalsen, Norway. July 4-7, 2009.

171. **Fisher, Erik**. June, 2009. "Laboratory Engagement, STIR: Initial Project Results." Presentation. TA NanoNed Annual Meeting, Utrecht, the Netherlands.

172. **Fisher, Erik**. June, 2009. "The Two Cultures in Science Policy." Presentation. Center for Science and Technology Policy Research. University of Colorado at Boulder, Boulder, CO.

173. **Fisher, Erik**. June, 2009. "Science and Society in the Laboratory? Reflections of an Embedded Humanist." Presentation. Colorado Fuel Cell Center. Colorado School of Mines, Golden, CO.

174. **Fisher, Erik**. June, 2009. "Integrating Science and Society in Nanotechnology Laboratories." Presentation. The Nano Renewable Energy Summit, Denver, CO.

175. **Fisher, Erik**. June, 2009. "Integrating Ethics and Engineering in the Laboratory: Reflections of an Embedded Humanist." Presentation. Graduate Interdisciplinary Liberal Engineering Ethics Workshop on Integrating Ethics and Societal Issues into a Graduate Curriculum. Virginia Tech, Blacksburg, VA.

176. **Fisher, Erik**. May 18, 2009. "Inquiry and Nanotechnology." Presentation. Human Practices Workshop. University of California at Berkeley, Berkeley, CA.

177. **Fisher, Erik**. May, 2009. "The "Two Cultures" in Science Policy Today." Presentation. University of Colorado-Denver, School of Public Affairs, Denver, CO.

178. **Fisher, Erik**. March, 2009. "Socio-Technical Integration Research." Presentation. Research Funding and the Good Life, University of Twente, the Netherlands.

179. **Fisher, Erik**. January, 2009. "STIR Project Overview." STIR Workshop 1: Constructing Foundations. Arizona State University, Tempe, AZ.

180. **Fisher, Erik**. November, 2008. "Deliberation on the Implementation of a Code of Conduct and fostering International Dialogue and Collaboration." Expert participant. European Commission, Brussels, Belgium.

181. **Fisher, Erik**. November, 2008. "Nanotechnology: Environment, Health and Safety." Presentation. Environmental Professionals of Arizona / Academy of Certified Hazardous Materials Managers, Tempe, AZ.

182. **Fisher, Erik**. October, 2008. "Laboratory Engagements: Risky Discourse and Research Decisions." Presentation. Networks, Risk and Knowledge Sharing, University of Massachusetts, Amherst, MA.

183. **Fisher, Erik**. July, 2008. "Collaborations for Financial Success: Universities Collaborating with Government and the Private Sector." Panelist. The Nano Renewable Energy Summit, Denver, CO.

184. **Fisher, Erik**. July, 2008. "Midstream Modulation: Embedding the Humanities in Engineering Practice and Education." Presentation. Kluyver Colloquium, Delft Technical University, Delft, the Netherlands.

185. **Fisher, Erik**. April, 2008. "Embedded Humanists." Presentation. Engineering in Context, Colorado School of Mines, Golden, CO.

186. **Fisher, Erik**. March, 2008. "Midstream Modulation and the Politics of Engagement." Presentation. STS in Action, Claremont, CA.

187. **Fisher, Erik**. December, 2007. "Inventing the Socially Conscious Laboratory." Presentation. Consortium for Science, Policy & Outcomes, Arizona State University, Tempe, AZ.

188. **Fisher, Erik**. September, 2007. "Integrating Social Considerations into Nanotechnology Research." Presentation. 1st Rocky Mountain Nanotechnology Showcase, Denver, CO.

189. **Fisher, Erik**. August, 2007. "Broader Impacts and the Embedded Humanist." Presentation. Making Sense of the Broader Impacts of Science and Technology, Golden, CO.

190. **Fisher, Erik**. July, 2007. "Integrating Societal Considerations and Nanotechnology in the Four Corners Region." Presentation. Colorado Nanotechnology Alliance, Denver, CO.

191. **Fisher, Erik**. June 27, 2007. "Integrating Science and Society in the Laboratory." Presentation. Center for Integrated Nanotechnologies, Los Alamos National Laboratory, Los Alamos, NM.

192. **Fisher, Erik**. June, 2007. "Drilling Down on U.S. Ethics Policy for Nanotechnology." Presentation. Center for Interdisciplinary Research (ZiF), Bielefeld University, Bielefeld, Germany.

193. **Fisher, Erik**. June, 2007. "Socio-technical Integration and the Nanotechnology Laboratory." Presentation. Visions about Nanoscience and Technology Workshop, Leuven, Belgium.

194. **Fisher, Erik**. June, 2007. "Investigating the Implementation of U.S. Ethics Policy for Nanotechnology." Presentation. Institute for Technology Assessment and Systems Analysis, Forschungszentrum Karlsruhe in der Helmholtz-Gemeinschaft, Karlsruhe, Germany.

195. **Fisher, Erik**. June, 2007. "Engaging the Reflexive Capacity of Nanotechnology Researchers." Presentation. Nanotechnology, Ethics & Sustainability; NANOMAT Conference, Bergen, Norway.

196. **Fisher, Erik**. June, 2007. "Socio-technical Integration at Macro and Micro Levels." Presentation. Rathenau Institute, Den Haag, The Netherlands.

197. **Fisher, Erik**. January, 2007. "Social and Policy Issues in Nanotechnology." Presentation. 5th CINT Users Workshop, Center for Integrated Nanotechnologies, Albuquerque, NM.

198. **Fisher, Erik**. November 20, 2006. "Current Societal Considerations in Nanotechnology." Presentation. Center for Integrated Nanotechnologies, Los Alamos National Laboratory, Los Alamos, NM.

199. **Fisher, Erik**. November, 2006. "Reflecting on the Shape of Nanotechnology Research from Within." Presentation. 4S Conference (Society for Social Studies of Science), Vancouver, Canada.

200. **Fisher, Erik**. September, 2006. "Socratic Engagement of Nanotechnology: A Case Study in Ethics Policy." Presentation. University of North Texas, Department of Philosophy and Religion Studies, Denton, TX.

201. Fisher, Erik. August, 2006. "From Upstream Engagement to Midstream Modulation: Shaping Technology from Within." Poster presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.

202. Fisher, Erik. July, 2006. "Midstream Modulation: U.S. Federal Nanotechnology Policy Implementation." Presentation. TA NanoNed Day, Utrecht University, the Netherlands.

203. Fisher, Erik. May, 2006. "Midstream Modulation of Technological Trajectories." Trading Zones and Interactional Expertise Workshop, Arizona State University, Tempe, AZ.

204. **Fisher, Erik** and Antonio Calleja. October, 2009. "Reflexive Modulation of Laboratory Practices for the Governance of Science and Technology." Presentation. Society for the Social Studies of Science Annual Meeting, Washington, DC.

205. **Fisher, Erik**, **Daan Schuurbiers** and **Harro Van Lente**. June, 2011. "A Whole New Set of Lab Responsibilities? Responsible Innovation and its Consequences for Research Practices." Presentation. Risky Entanglements? Contemporary Research Cultures Imagined and Practiced, Vienna, Austria.

206. **Fisher, Erik** and **David H. Guston**. July, 2011. "Integration of Social Science and Humanities Scholars with Natural Scientists." Presentation. Anticipatory Governance of Emerging Technologies: Foresight, Engagement and Integration. Euroscience Open Forum, Turino, Italy.

207. **Fisher, Erik** and **David H. Guston**. June, 2010. "Changing Practices: An Engagement of Expert Epistemologies in the Making." Presentation. Ninth Annual Meeting of the Science and Democracy Network. Kavli Royal Society International Centre, Chicheley Hall, United Kingdom.

208. **Fisher, Erik** and Derrick Anderson. December 04, 2009. "From Lab to Legislature: Public Value Mapping of Nanotechnology Science and Innovation Policy Making." Presentation. Dupont Summit on Science and Technology Policy, "The New Administrations Challenges on Science and Technology: Staying the Course in Times of Crisis." Policy Studies Organization, Carnegie I, Washington, DC.

209. **Fisher, Erik**, Derrick Anderson and David Renolds. August, 2008. "Mapping and Modulating the Public Value of Academic Research." Poster presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.

210. **Fisher, Erik** and Eric Kennedy. September 8-11, 2013. "Communities of Practice: Sociotechnical Integration (CoPSI)." Digital Poster. 1st Global Conference on Research Integration and Implementation. Australia National University. Canberra, Australia.

211. **Fisher, Erik** and Francois Thoreau. September, 2010. "On Reflection and Reflexiveness: Positioning the Self, Enframing the Other." Presentation. Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Darmstadt, Germany.

212. **Fisher, Erik** and Hannot Rodriguez. August, 2010. "Socio-technical Integration in European Framework Programmes." Poster Presentation. Gordon Research Conference on Science and Technology Policy, Waterville Valley, NH.

213. **Fisher, Erik** and Hannot Rodriguez. April, 2010. "Tracking the Pervasiveness of Socio-Technical Integration in the European Research and Development Framework Programmes." Presentation. Science and Governance: Global and Comparative Perspectives. Arizona State University, Tempe, AZ.

214. **Fisher, Erik** and **Roop L. Mahajan**. November, 2006. "Midstream Modulation." Presentation. International Mechanical Engineering Conference, Chicago, IL.

215. **Fisher, Erik** and Shannon Conley. November, 2011. "Socio-Technical Integration: Collaborating with Geneticists in Patient Engagement." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

216. **Fisher, Erik**, Shannon Conley and Cameron Keys. September 8-11, 2013. "Socio-Technical Integration Research: Around the world in 30 labs." Presentation. Digital Poster. 1st Global Conference on Research Integration and Implementation. Australia National University. Canberra, Australia.

217. **Fisher, Erik** and Topi Heikkero. May, 2011. "Public Deliberation in the Education of Science: Contemporary Practices and Classical Ideals." Presentation. Annual Meeting of the Society for Philosophy and Technology. University of North Texas.

218. Foley, Rider W. November 18, 2013. "Scenarios: A Means to Understand Future Implications of Science and Technology." Presentation. Invited Talk at BioScience High School. Phoenix, AZ.

219. Foley, Rider W. November, 2012. "Guilding Innovation Sustainably: Applying Principles of Sustainaility and Anticipatory Governance." Paper Presentation. 1st Sustainable Nanotechnology Organization Conference (SNO), Washington, DC.

220. Foley, Rider W. and **Arnim Wiek**. October, 2012. "Nanotechnology Innovation: Governance by Urban Actors." Paper Presentation. 4th Annual Conference for the Society for the Studies of Nanoscience and Emerging Technologies (S.NET), Enschede, the Netherlands.

221. Foley, Rider W. and **Arnim Wiek**. November, 2011. "Reconciling Urban Sustainability Syndromes and Urban Nanoscape." Poster Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

222. Foley, Rider W., **Arnim Wiek** and **David H. Guston**. June 2013. "Integrating Nanotechnology into Comprehensive Interventions to Global Challenges." Presentation. Gordon Research Conference: Environmental Nanotechnology. Stowe, VT.

223. Foley, Rider W., **Arnim Wiek** and **David H. Guston**. February 2013. "Risk versus Reward: Comparing Cultures of Innovation." Presentation. Annual Meeting of the American Association for the Advancement of Science (AAAS). Boston, MA.

224. Foley, Rider W., Braden Kay, Richard Rushforth and **Arnim Wiek**. May, 2012. "Can Nanotechnology Decontaminate Water in a Morally Contested Contex?" Presentation. International Symposium on Sustainable Systems and Technology, Boston, MA.

225. Foley, Rider W., C. Kuzdas, B. Warner, Lauren Withycombe Keeler, D, Iwaniec and **Arnim Wiek**. February, 2012. "Designing Sustainable Governance: Cross-Domain Comparison and Evaluation." Poster Presentation. 3rd Annual International Conference on Sustainability Science, Tempe, AZ.

226. Foley, Rider W., **Darren Petrucci** and **Renata Hejduk**. October 2013. "Scenarios of the Nano-enhanced City." Presentation. 5th Annual Conference for the Society for the Studies of Nanoscience and Emerging Technologies (S.NET). Boston, MA.

227. Foley, Rider W., **Ira Bennett**, **Jameson Wetmore**, **David H. Guston** and **Arnim Wiek**. October, 2012. "Applied Nanoethics: Who is Reponsible for what." Paper Presentation. 4th Annual Conference for the Society for the Studies of Nanoscience and Emerging Technologies (S.NET), Enschede, the Netherlands.

228. Foley, Rider W., Michael J. Bernstein and Youngjae Kim. May 2013. "Ground Control: Linking Top-down and Bottom-up Approaches for International Nanotechnology Governance." Presentation. First Annual Conference on Governance of Emerging Technologies. Chandler, AZ.

229. Foley, Rider W., Thomasz Kalinowski and Richard Rushforth. December, 2012. "Rethinking Participatory Technology Assessment: Integrating Diverse Perspectives from the Community, Engineering, and Sustainability." Paper Presentation. Dupont Summit on Science, Technology, and Environmental Policy, Carnegie Institute for Science, Washington, DC.

230. Gallo, Jason. October 19, 2007. "The National Science Foundation and the Creation of a Standing Army for Science." Paper presentation. Annual Meeting of the Society for the History of Technology, Washington, DC.

231. Gallo, Jason. April, 2007. "The National Science Foundation and the Control of Information." Department of Life Sciences Communication colloquium series, University of Wisconsin, Madison, WI.

232. Gano, Gretchen. August 2014. "Participatory Technology Assessment (pTA) as Technological Wayfinding." Presentation. New Designs for Engagement: Theories and Practices of Material Deliberation Panel. Society for the Social Studies of Science/ECOSITE Annual Meeting.

233. Gano, Gretchen. 2011. "Local Deliberation and Imagined Transition Epistemologies." Presentation. Annual Meeting of the Society for the Social Studies of Science, Cleveland, OH.

234. Gano, Gretchen. 2011. "Finding Futures." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

235. Gano, Gretchen. 2011. "Empowerment and Social Learning: Long Term Benefits of Citizen Deliberation about Nanotechnologies for Human Enhancement." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

236. Gano, Gretchen. 2011. "What we've learned about Nano and Society a Working Session on Data Sharing for NSF NSECs." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

237. Gano, Gretchen. 2011. "Emergent Technology Assessment: the Transition Initiative and Energy Futures." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

238. Gano, Gretchen. 2011. "Exploring the Uncertain Technological Future: Lessons in Anticipatory Governance." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

239. Gano, Gretchen and Krista Harper. April 2014. "Futurescape Springfield." Presentation. Museums à la Carte Lecture. Springfield Museums.

240. Gao, L., **Alan L. Porter**, Tingting Ma, Wenping Wang, Stephen Carley and X. Zhang. 2011. "Measuring the Interdisciplinarity of Nano-Biosensor Research based on Citation Analysis." Presentation. Atlanta Conference on Science and Innovation Policy 2011, Atlanta, GA.

241. Garay, Manuel and **Erik Fisher**. August, 2008. "NSECs and the Integration of Societal Concerns into R&D." Poster presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.

242. **Garcia, Antonio** and **Joan McGregor**. October 17, 2008. "Will Genetic Discrimination Replace Racial Discrimination?" Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

243. Glerup, Cecilie. October 20, 2012. "Managing Demands for Social Engagement." Presentation. Panel Presentation on "Displacing the Laboratory and STS with It. New Modes of Engagement-Naural Scientists and the Lab. 4S/EASST Conference, Copenhagen, Denmark.

244. Glerup, Cecilie. 2012. "Scientific Social Responsibility as a Mode of Ordering." Presentation. Arizona State University, Tempe, AZ.

245. **Goodnick, Stephen** and **Tim Lant**. November 20, 2009. "Good to the Last Drop? The Water-Energy Connection." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

246. **Gordon, Claire** and Ira Bennett. February 16, 2007. "Why Things (Still) Don't Fit: Human Variation and Ergonomics in the 21st Century." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

247. Guo, Ying, **Alan L. Porter** and Lu Huang. May, 2011. "Empirically Informing a Technology Delivery System Model for an Emerging Technology: Illustrated for Dye-Sensitized Solar Cells." Presentation. 4th International Seville Conference on "Future-Oriented Technology Analysis".

248. Guo, Ying, **Alan L. Porter** and Lu Huang. October, 2009. "Comparing and Probing National Research Strategies for Nanotechnology Thin-film Solar Cells." Presentation. 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

249. Guo, Ying, **Alan L. Porter** and Lu Huang. April 09, 2009. "Nano-enhanced Thin-film Solar Cells: Global Activity and Forecast." Paper presentation. IAMOT 2009, 18th International Conference on Management of Technology, Management of Green Technology, International Association for Management of Technology, Orlando, FL.

250. Guo, Ying, Lu Huang and **Alan L. Porter**. October, 2009. "Profiling Research Patterns for a New and Emerging Science and Technology: Dye-sensitized Solar Cells." Presentation. 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

251. Guo, Ying, Lu Huang, L. Zhang, D. Zhu and **Alan L. Porter**. 2011. "Up-to-down Science & Technology Planning: a New Approach Based on Patent Data and Technology Roadmapping." Presentation. Global TechMining Conference, Atlanta, GA.

252. Guo, Ying, Tingting Ma, **Alan L. Porter** and Ismael Rafols. October, 2011. "A Comparative Analysis of Asia-Pacific Research Thrusts vs. Euro-North American for DSSC by Employing Tech Mining Approach." Presentation. The 6th Aceanian Conference on Dye-sensitized and Organic Solar Cells, Beppu, Japan.

253. Guo, Ying, Tingting Ma, **Alan L. Porter**, Jose M. Vicente Gomila and Chen Xu. October, 2011. "Technology Opportunities Analysis for DSSCs using Text Mining and Semantic-TRIZ." Presentation. The 6th Acenian Conference on Dye-sensitized and Organic Solar Cells, Beppu, Japan.

254. **Guston, David H.** May 2013. "Responsible Innovation." Presentation. Video presentation at Society of Environmental Toxicology and Chemistry annual meeting. Glasgow, United Kingdom.

255. **Guston, David H.** May 2013. "Rethinking Responsibility in Innovation." Presentation. The Brookings Institution. Washington, DC.

256. **Guston, David H.** March, 2013. "The Role of Real-Time Technology Assessment in STI Processes." Keynote Address. Second Annual International Symposium on Science, Technology and Innovation Governance, University of Tokyo, Tokyo, Japan.

257. **Guston, David H.** October, 2012. "Anticipatory Governance as a Form of Making Science Public." Presentation. Annual Meeting of the Society for Social Studies of Science, Copenhagen, Denmark.

258. **Guston, David H.** October, 2012. "Back to the Future: Why Should We Promote Oublic Engagement with Science?" Presentation. Annual Meeting of the Society for Social Studies of Science, Copenhagen, Denmark.

259. **Guston, David H.** May 11, 2012. "The Pumpkin or the Tiger?: Frederick Soddy, Michael Polanyi and the Anticipatory Governance of Emerging Technologies." Presentation. Come and Tell About the Future Seminar.

260. **Guston, David H.** March 06, 2012. "The Pumpkin or the Tiger? Polanyi, Soddy and the Anticipation of Emerging Technologies." Presentation. Workshop on Pacing Governance with Technology, Scottsdale, AZ.

261. **Guston, David H.** March 01, 2012. "EMERGE: From Technology to Democracy." Presentation. Emerge: Artists + Scientists Redesign the Future, Tempe, AZ.

262. **Guston, David H.** February 14, 2012. "Nanotechnology and Anticipation." Talk. UW Bothell Innovation Forum, with other panelists speaking on Innovation Squared: Why innovations in technology require innovations in ethics, Bothell, WA.

263. **Guston, David H.** February 13, 2012. "Anticipatory Governance of Emerging Technologies." Talk. Biological Futures in a Globalized World colloquium series at University of Washington, Seattle, WA.

264. **Guston, David H.** December, 2011. "Innovation and Advances in Governance of Nanotechnology: New Research in Anticipatory Governance of Nanotechnology." Presentation. National Science Foundation 2011 NSF NSE Grantees Meeting, Arlington, VA.

265. **Guston, David H.** November 03, 2011. "The Pumpkin or the Tiger? Or, Michael Polanyi, Frederick Soddy and the Anticipatory Governance of Emerging Technoscience." Presentation. Society for the Study of Science (4S) Annual Conference, Cleveland, OH. Guston,

266. **Guston, David H.** June, 2011**.** "Shaping Science and Nanotechnology Future." Presentation. 2011 "Environmental Nanotechnology" Gordon Research Conference, Waterville Valley, NH.

267. **Guston, David H.** May 22, 2011. "The Role of Nanotechnologies in our Future." Presentation. Humanist Society of Greater Phoenix.

268. **Guston, David H.** April 04, 2011. "Nano and the City: Anticipatory Governance and Urban Sustainability." Presentation at 8th Annual U.S. - Korea Forum on N. California Technical Institute, Pasadena, CA.

269. **Guston, David H.** March 14, 2011. "Anticipatory Governance: A Strategic Vision for Building Reflexivity into Emerging Technologies." Presentation. Resilience 2011, Arizona State University, Tempe, AZ.

270. **Guston, David H.** March 11, 2011. "CNS-ASU and its Strategic Vision of Anticipatory Governance." Talk. Service Academy Alumni of Arizona.

271. **Guston, David H.** March 02, 2011. "Anticipatory Governance of Emerging Technologies." Presentation. Technology and Ethics Working Group, Yale University, New Haven, CT.

272. **Guston, David H.** December 06, 2010. "Anticipatory Governance of Emerging Technologies." Presentation. "New Tools for Science Policy: Better S&T for the Real World" series, CSPO, Washington, DC.

273. **Guston, David H.** November 17, 2010. "Anticipatory Governance of Emerging Technologies." Presentation. ESRC Genomics Forum, University of Edinburgh, Edinburgh, United Kingdom.

274. **Guston, David H.** November 15, 2010. "The Pumpkin of the Tiger? Or, When to Consider the Risks of Research." Presentation. Institute of Hazard, Risk, and Resilience, Durham University, Durham, United Kingdom.

275. **Guston, David H.** November 10, 2010. "Anticipatory Governance of Emerging Technologies." Presentation. Institute of Systems and Synthetic Biology, Imperial College, London, United Kingdom.

276. **Guston, David H.** November 04, 2010. "Anticipatory Governance of Emerging Technologies: The Center for Nanotechnology in Society at ASU." Presentation. Triple Helix at ASU, Tempe, AZ.

277. **Guston, David H.** July, 2010. "Anticipatory Governance of Emerging Technologies: Foresight, Engagement and Integration." Presentation. Euroscience Open Forum 2010, Torino, Italy.

278. **Guston, David H.** May 10, 2010. "Reflections on Anticipatory Governance of Nanotechnology: Meanings for the Regulatory Environment." Talk. Toward Regulation of Nanomaterials: Conversation between academia, industry, law, and government, University of Notre Dame, IN.

279. **Guston, David H.** March, 2010. "Broader Societal Implications." Plenary remarks. Nano2: International Study of the Long-term Impacts and Future Opportunities for Nanoscale Science and Engineering, Evanston, IL.

280. **Guston, David H.** March, 2010. "The Anticipatory Governance of Emerging Technologies." Plenary remarks. INEW 2010: The Second International Nanomaterials Ethics Workshop, Korea Institute of Science and Technology, Seoul, Korea.

281. **Guston, David H.** March, 2010. "The Center for Nanotechnology at Arizona State University." Lecture. Program in the History and Philosophy of Science, Seoul National University, Seoul, Korea.

282. **Guston, David H.** February, 2010. "Bridging Nanoscience and Society: The Center for Nanotechnology in Society at ASU." Presentation. Annual Meeting of the American Association for the Advancement of Science, San Diego, CA.

283. **Guston, David H.** December, 2009. "Anticipatory Governance at the Center for Nanotechnology in Society." Lecture. ESRC Critical Public Engagement Seminar. Durham Universit, Durham, UK.

284. **Guston, David H.** December, 2009. "Public Engagement at CNS-ASU: The National Citizens Technology Forum and Other Modes." Lecture. Institute for Hazard Risk Research. Durham University, Durham, UK.

285. **Guston, David H.** October, 2009. "Genealogies of Anticipatory Governance." Presentation. Annual Meeting of the Society for Social Studies of Science, Washington, DC.

286. **Guston, David H.** October, 2009. "STS and Policy in the Academy." Chairs Plenary Panel. Annual Meeting of the Society for Social Studies of Science, Washington, DC.

287. **Guston, David H.** October, 2009. "Emerging Technologies and Sustainability: Parts I and II." Webinar briefing. Consultative Group on Biodiversity with the Center for Genetics and Society, San Francisco, CA.

288. **Guston, David H.** September 09, 2009. "The Roots, Branches and First Fruits of Anticipatory Governance." Presentation. Nanoethics Graduate Education Symposium, University of Washington, Seattle, WA.

289. **Guston, David H.** June, 2009. "Anticipatory Governance of Emerging Technologies." Presentation. NINE Summer Students Program. Sandia National Laboratory, Sandia, NM.

290. **Guston, David H.** June, 2009. "From the Lab to the Legislature: Locating Technology Assessment." Lecture on Science and Values. The Politicisation of Science. University of Bielefeld, Bielefeld, Germany.

291. **Guston, David H.** April, 2009. "Anticipatory Governance of Emerging Nanotechnologies at CNS-ASU." Video Plenary Lecture. Nanotechnology: Here and Now Meeting. Ministry of Research, Science and Technology, Wellington, New Zealand.

292. **Guston, David H.**, et al. March 09, 2009. "Nanotechnology and the Public: Data for Decision Makers." Briefing. U.S. Congressional Nanotechnology Caucus, Washington, DC.

293. **Guston, David H.** March, 2009. "Nano, Human Enhancement, and Public Engagement." Presentation. Faculty seminar on transhumanism, Center for the Study of Religion and Conflict, Arizona State University, Tempe, AZ.

294. **Guston, David H.** March, 2009. "Anticipatory Governance at the Center for Nanotechnology in Society at ASU." Presentation. Center for the Study of Institutional Diversity brown bag, Arizona State University, Tempe, AZ.

295. **Guston, David H.** March, 2009. "Public Engagement: National Citizens' Technology Forum." Presentation. Nanotechnology and the Public: Data for Decision Makers briefing before the U.S. Congressional Nanotechnology Caucus, Washington, DC.

296. **Guston, David H.** March, 2009. "Anticipatory Governance at the Center for Nanotechnology in Society at ASU." Presentation. Department of Political Science brown bag, Arizona State University, Tempe, AZ.

297. **Guston, David H.** March, 2009. "Anticipatory Governance at the Center for Nanotechnology in Society at ASU." Video lecture. Graduate class in Science and Technology Policy, Ford School of Public Policy, University of Michigan, Ann Arbor, MI.

298. **Guston, David H.** September 10, 2008. "CNS-ASU and Nano-in-Society in the USA." Presentation by video. Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.

299. **Guston, David H.** July, 2008. "Reflections on CNS-ASU and Nano in Society in the U.." Keynote talk. Dutch NanoNed Flagship TA and Societal Aspects of Nanotechnology meeting, Utrecht, The Netherlands.

300. **Guston, David H.** June, 2008. "The Center for Nanotechnology in Society at ASU and the Anticipatory Governance of Emerging Technologies." Presentation. Institute for Science and Technology Studies, Bielefeld University, Bielefeld, Germany.

301. **Guston, David H.** June, 2008. "Anticipatory Governance of Nanotechnologies: The Center for Nanotechnology in Society at ASU." Special talk. Visiting Japanese technology assessment delegation, Arizona State University, Tempe, AZ.

302. **Guston, David H.** April 04, 2008. "Governing Emerging Technologies." Presentation. Arizona Institute of Nanoelectronics opening ceremonies, Tempe, AZ.

303. **Guston, David H.** February, 2008. "Anticipatory Governance at the Center for Nanotechnology in Society at ASU." Video lecture. Graduate class in Science and Technology Policy, Ford School of Public Policy, University of Michigan, Ann Arbor, MI.

304. **Guston, David H.** November, 2007. "Toward Anticipatory Governance of Emerging Technologies." Presentation. Special Series on Science and Public Policy, Brown University, Providence, RI.

305. **Guston, David H.** November, 2007. "Governing Emerging Technologies." Presentation. Spirit of the Senses Salon, Phoenix, AZ.

306. **Guston, David H.** June 14, 2007. "Anticipatory governance and reflexivity: A means for realtime technology assessment." Talk. The Future of Nanotechnology: A Celebration of the 30th Anniversary of the Cornell NanoScale Science & Technology Facility, Cornell University, Ithaca, NY.

307. **Guston, David H.** December, 2006. "Anticipatory Governance of Emerging Technologies." Presentation. Monthly meeting of the Arizona Nanotechnology Cluster, Tempe, AZ.

308. **Guston, David H.** October, 2006. "Anticipatory Governance of Emerging Technologies: The Center for Nanotechnology in Society at ASU." Presentation. Stanford University Seminar in Science, Technology and Society, Stanford, CA.

309. **Guston, David H.** August, 2006. "Anticipatory Governance of Emerging Technologies." Presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.

310. **Guston, David H.** May, 2006. "CNS-ASU: Interdisciplinary Programs in a Self-Styled Boundary Organization." Presentation. Conference of Trading Zones, Interactional Expertise, and Interdisciplinary Collaboration, Arizona State University, Tempe, AZ.

311. **Guston, David H.** May, 2006. "What Do We Want to Learn from Public Participation in Nanotechnology?" Presentation. NNI Public Participation in Nanotechnology Workshop, Arlington, VA.

312. **Guston, David H.** April, 2006. "Social Science Engages Nanotechnology." Invited talk. Virginia Tech, Blacksburg, VA.

313. **Guston, David H.** February 17, 2006. "The Center for Nanotechnology in Society at ASU." Nanotechnology Seminar: Social Science Engages Nanotechnology, AAAS Annual Meeting 2006, St. Louis, MO.

314. **Guston, David H.** February, 2006. "Anticipatory Governance at the Center for Nanotechnology in Society at ASU." Video lecture. Graduate class in Science and Technology Policy, Ford School of Public Policy, University of Michigan, Ann Arbor, MI.

315. **Guston, David H.** February, 2006. "Societal Implications of Nanotechnology." Lecture. Discovery Lecture Series 2006, Transforming Society Through Emerging Technologies: The National Nanotechnology Initiative at Five Years, Purdue University, West Lafayette, IN.

316. **Guston, David H.** and **Arnim Wiek**. November 16, 2010. "Nano and the City: Anticipatory Governance and Urban Sustainability." Presentation. Department of Geography, Durham University, Durham, United Kingdom.

317. **Guston, David H.** and **Arnim Wiek**. September, 2010. "Urban Design, Materials, and Built Environment: Nano in the City Research at ASU-CNS." Presentation. S.NET Conference, Darmstadt Technical University, Darmstadt, Germany.

318. **Guston, David H.**, **Erik Fisher** and **Daniel Sarewitz**. April 27, 2012. "Introduction to Responsible Innovation." Presentation. International Collaboration Working Group Seminar.

319. **Halden, Rolf** and **Ben Hurlbut**. May 20, 2011. "Germ-Free and other Myths: Examining Antimicrobial Products." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

320. **Hamlett, Patrick**. March, 2008. "Public Deliberations About Science and Technology: Should the Public Have a Say on the Future of Nanotechnology." Presentation. NSF Science and Technology Center Program, Center for Environmentally Responsible Solvents and Processes Innovation Seminar Series, North Carolina State University, Raleigh, NC.

321. **Hamlett, Patrick** and **Michael D. Cobb**. August, 2008. "Reporting the Results of the first National Citizens Technology Forum." Presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.

322. **Hamlett, Patrick** and **Michael D. Cobb**. July, 2008. "The First National Citizens Technology Forum on Human Enhancement: Results and Prospects." Paper presentation. VIPSI-2008 (Information Processing Society, International) Conference: Knowledge Engineering, Tutorials, & Brainstorming, Pisa, Italy.

323. **Hamlett, Patrick** and **Michael D. Cobb**. May, 2008. "The First National Citizens Technology Forum on Nanotechnology - First Results." Presentation. University & Industry Consortium, Spring 2008 Meeting, Lansing, MI.

324. **Harper, Krista**, **Gretchen Gano** and Marc Lorenc. October 30-November 2, 2014. "Futurescape City Tour Springfield: Science and Technology Studies in a Deindustrializing City." Presentation. Association of Collegiate Schools of Planning Annual Conference.

325. **Harsh, Matthew**. January 2014. "Designing a Community Engagement Short Course for Engineers." Presentation. Global Engineering Symposium, Engineers without Borders Canada National Conference. Toronto, Ontario, Canada.

326. **Harsh, Matthew**. December 2013. "Nanotechnology Public Engagement Program NanoNews Writing Workshop (for graduate students)." Presentation. Co-facilitator for the South African Agency for Science and Technology Advancement. Cape Town, South Africa.

327. **Harsh, Matthew**. November 2013. "Ethics and Nanomaterials." Presentation. South African Department of Science and Technology’s Nanoscience and Nanotechnology Summer School. University of the Western Cape. Cape Town, South Africa.

328. **Harsh, Matthew**. 2013. "Ethics and Nanomaterials." Presentation. Invited presentation at the South African Department of Science and Technology's Nanoscience and Nanotechnology Summer School. University of the Western Cape. Cape Town, South Africa.

329. Harsh, Matthew. April, 2012. "Biotechnology and Nanotechnology in Sub-Saharan Africa: Who Decides?" Paper Presentation. Centre for Engineering and Society, Concordia University, Montreal, Canada.

330. Harsh, Matthew. November, 2011. "Issues Facing STS Research on the Governance of Emerging Technologies in sub-Saharan Africa." Presentation. Annual Meeting of the Society for the History of Technology, Cleveland, OH.

331. Harsh, Matthew. March 29, 2011. "Pro-poor Nanotechnology Applications for Water: Characterizing Private Sector Research Using Publication Data." Paper presentation. Winter School on Emerging Nanotechnologies, organized by Grenoble Ecole de Management, Autrans, France.

332. **Harsh, Matthew**, **Susan Cozzens**, **Jameson Wetmore**, Rafael Castillo, Rodrigo Cortes Lobos, Ogundiran Soumonni and Thomas Woodson. 2013. "Preparing Engineers for the Challenges of Community Engagement: A Short Training Course Approach." Presentation. Engineering, Social Justice, and Peace Conference. Rensselaer Polytechnic Institute. Troy, NY.

333. Harsh, Matthew and Thomas Woodson. November, 2011. "Pro-Poor Nanotechnology Applications for Water: Characterizing Private Sector Research." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

334. Harsh, Matthew and Thomas Woodson. April, 2011. "Mapping Nano-Innovation Systems for Water Applications." Presentation. Winter School on Emerging Nanotechnologies, Grenoble cole de Management, Pinsot, France.

335. Hays, Sean A. July, 2009. "Nietzsche and the Philosophical Underpinnings of Human Enhancement." Presentation. SPT 2009: Converging Technologies, Changing Societies. Society for Philosophy and Technology, University of Twente, the Netherlands.

336. Hays, Sean A. March, 2009. "Transhumanism, Anti-humanism, and Nietzsche's Overman." Presentation. Human Enhancement & Nanotechnology, Western Michigan University, Kalamazoo, MI.

337. **He, Jiping** and Jason S. Robert. June 04, 2006. "Wiring Brains to Machines: Science Fiction or Science Fact." Talk. CNS-ASU Science Cafe, Mills End Coffee Shop, Tempe, AZ.

338. **Hendrickson, Kirstin** and **Scott Lefler**. November 19, 2010. "You Are What You Eat: America's Relationship with Food." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

339. **Herkert, Joseph**, **Heather Canary**, **Karin D. Ellison** and **Jameson Wetmore**. November, 2011. "Integrating Microethics and Macroethics in Graduate Science and Engineering Education." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

340. **Hibner Koblitz**, **Ann**, **Priscilla Greenwood** and **Jennifer McNeill Bekki**. March 21, 2008. "Women in Science: Various Issues and Viewpoints." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

341. **Hillback, Elliott D.**, Anthony D. Dudo, Jiun-Yi Tsai, **Sharon Dunwoody**, **Dominique E. Brossard** and **Dietram A. Scheufele**. December, 2009. "Tracking Online Behavior after Exposure to News of a Local Nanotechnology Risk: A Risk Information Seeking and Processing (RISP) Model Approach." Presentation. Annual Convention of the Society for Risk Analysis (Emerging Nanoscale Materials Specialty Group Student Merit Award), Baltimore, MD.

342. **Ho, Shirley S.**, **Dietram A. Scheufele** and **Elizabeth A. Corley**. June, 2010. "Integrating Models of Mass-Interpersonal Communication: Testing Moderation and Mediation Effects of Elaborative Processing and Interpersonal Discussion on Scientific Knowledge and Public Attitudes Tow." Presentation. Annual Convention of the International Communication Association, Singapore.

343. **Ho, Shirley S.**, **Dietram A. Scheufele** and **Elizabeth A. Corley**. August, 2009. "Value Predispositions, Mass Media, and Attitudes toward Nanotechnology: The Interplay of Public and Experts." Presentation. Annual Convention of the Association for Education in Journalism and Mass Communication, Bostom, MA.

344. **Ho, Shirley S.**, **Dietram A. Scheufele** and **Elizabeth A. Corley**. May, 2009. "Making Sense of Policy Choices: A Closer Look at the Mediating Roles of Elaborative Processing and Interpersonal Discussion on Public Perceptions of Nanotechnology." Paper presentation. Annual convention of the International Communication Association, Chicago, IL.

345. **Ho, Shirley S.**, **Dietram A. Scheufele** and **Elizabeth A. Corley**. August, 2008. "Influences of Mass Media, Interpersonal Communication, and Cognitive Processing on Risks versus Benefits Perception of Nanotechnology." Paper presentation. Annual convention of the Association for Education in Journalism and Mass Communication, Chicago, IL.

346. **Ho, Shirley S.**, Xuan Liang, **Dominique E. Brossard**, **Dietram A. Scheufele**, **Michael A. Xenos**, X. Hao and X. He. June 2013. "Value Predispositions as Perceptual Filters: A Cross-cultural Comparison

of Public Attitudes toward Nanotechnology in the United States and Singapore." Presentation. Annual Convention of the International Communication Association. London, United Kingdom.

347. **Hogle, Linda F.** March, 2007. "Stem Cells as a Study in Transience: A Future History." Paper presentation. Max Planck Institute for the History of Science, Berlin, Germany.

348. **Holbert, Keith** and **Clark A. Miller**. January 18, 2008. "Why Not Nuclear Power? The Science and Politics behind Nuclear Energy." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

349. **Honsberg, Christiana** and **Nancy LaPlaca**. March 15, 2013. "Power in the Nano City: Electricity, Democracy and Mutual Influence." Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.

350. Huang, Lu, **Alan L. Porter** and Ying Guo. April 06, 2009. "Identifying the Role of Emerging Nanoparticles in Biosensors." Paper presentation. IAMOT 2009, 18th International Conference on Management of Technology, Management of Green Technology, International Association of Management of Technology, Orlando, FL.

351. Huang, Lu, Ying Guo and **Alan L. Porter**. October, 2009. "A Systematic Technology Forecasting Approach for New and Emerging Science and Technology: Case Study of Nano-enhanced Biosensors." Presentation. 2009 Atlanta Conference on Science and Innovation Policy. The Paper won the Best Graduate Student Paper Award at the 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

352. Huang, Lu, Ying Guo, D. Zhu, **Alan L. Porter**, **Jan Youtie** and **Douglas K.R. Robinson**. 2011. "Organizing a Multidisciplinary Workshop for Forecasting Innovation Pathways: The Case of Nano-Enabled Biosensors." Presentation. Atlanta Conference on Science and Innovation Policy 2011, Atlanta, GA.

353. Huang, Lu, Ying Guo, **Jan Youtie** and **Alan L. Porter**. "Early Commercialization Pattern Profiling: Nano-Enhanced Biosensors." Presentation. PICMET (Portland International Conference on Management of Engineering and Technology, Vancouver, Canada.

354. Huang, Lu, Ying Guo, Tingting Ma and **Alan L. Porter**. May, 2011. "Text Mining of Information Resources to Inform Forecasting of Innovation Pathways." Presentation. 4th International Seville Conference on "Future-Oriented Technology Analysis".

355. **Huang, Wan-Ling**, **Eric Welch** and **Elizabeth A. Corley**. 2009. "Public Sector Voluntary Initiatives: The Adoption of the Environmental Management System for Biosolids by Public Waste Water Treatment Facilities in the United States." Paper Presentation. Midwest Political Science Association Conference.

356. **Jacobs, Bert** and **Jameson Wetmore**. March 23, 2007. "Transferring Western Technology to Developing Countries: Good Intentions, Unexpected Outcomes." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

357. **Jimenez, Benedict**, **Eric Welch** and **Elizabeth A. Corley**. 2009. "Explaining Differences in the Quality and Effectiveness of Environmental Management Systems in Public Organizations: The Experience of Public Sewage and Wastewater Treatment Facility Operators in the." Paper Presentation. Midwest Political Science Association Conference.

358. Johnson, Darlene, Santiago Manriquez, **Terry Ryan**, Lynda Zeise and **Cynthia Selin**. November 21, 2008. "Democratizing Science: Should the Public Have a Voice in Science Research and Development." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

359. **Johnston, Stephen** and **Joan McGregor**. September, 2006. "Predicting Your Medical Future (Doc-in-a-Box)." CNS-ASU Science Cafe, Changing Hands Bookstore, Tempe, AZ.

360. **Jung, Ranu** and **Jason S. Robert**. January, 2007. "Adaptive Technologies for the Central Nervous System: Are We Changing What It Means to be Human." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

361. **Kambhampati, Subbarao** and David Calverley. November 16, 2007. "Do Robots Need a Bill of Rights? Implications of Artificial Intelligence." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

362. **Kavazanjian, Edward** and **Tim Lant**. April 15, 2011. "Disasters in Arizona: Are We Prepared." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

363. Kay, Luciano. November 05, 2011. "Aggregate Patterns of Linkage of Nanotechnology Centers with Industry: Program Outcomes." Session. Evaluation of a Nano Science and Technology Centers Program: Mixed Methods Approach to Assessing its Realization of Policy Objectives, American Evaluation Association.

364. Kay, Luciano. October, 2009. "The Emergence of Nanotechnology Enterprise in Brazil." Presentation. 2nd Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.

365. Kay, Luciano. October, 2009. "Nanotecnologia en America Latina. Brasil y la Emergencia de Nano-empresas." Presentation. VI Seminario Internacional Nanotecnologia, Sociedade e Meio Ambiente - VI Seminanosoma, Manaus, Brazil.

366. Kay, Luciano. May, 2009. "Developing Nanotechnology in Latin America." Poster presentation. NSF Site Visit for CNS Renewal, Tempe, AZ.

367. Kay, Luciano. May, 2009. "Nanotechnology R and D Collaboration with Brazil. Managing Challenges and Opportunities in an Emerging Networked Technology." Presentation. Workshop of International R and D Cooperation with Latin America, Madrid, Spain.

368. Kay, Luciano. January, 2009. "Nanotechnology Research Networks in Brazil." Poster presentation. CNS All Hands Meeting, Tempe, AZ.

369. Kay, Luciano. January, 2008. "Nanotechnology in Latin America." Paper presentation. DRUID-DIME Academy Winter 2008 Ph.D. Conference on Economics and Management of Innovation and Organizational Change, Rebild, Denmark.

370. Kay, Luciano and **Jan Youtie**. October, 2012. "Emerging Technologies and Corporate Strategies: The Case of Nanotechnology for Energy Storage Solutions." Presentation. Society for the Study of Nanoscience and Emerging Technologies (S.NET), University of Twente, the Netherlands.

371. Kay, Luciano, **Noela Invernizzi** and **Philip Shapira**. October, 2009. "The Role of Brazilian Firms in Nanotechnology Development." Presentation. 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

372. **Kim, Matt** and **Prasad Boradkar**. September, 2007. "Designing Things: Balancing Beauty, Utility and Sustainability in Products." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

373. Kim, Youngjae, **Elizabeth A. Corley** and **Dietram A. Scheufele**. May, 2013. "The Role of Social Responsibility in Leading Nano-Scientists' Perceptions about Nanotech Research and Regulation." Paper Presentation. The Annual Conference on Governance of Emerging Technologies: Law, Policy, and Ethics, Chandler, AZ.

374. Kim, Youngjae, **Elizabeth A. Corley** and **Dietram A. Scheufele**. 2013. "How Do Leading U.S. Nano-scientists View their Social Responsibility for Nanotech Research?" Presentation. The Second Conference of the Sustainable Nanotechnology Organization Santa Barbara. Santa Barbara, CA.

375. Kim, Youngjae, **Elizabeth A. Corley** and **Dietram A. Scheufele**. November, 2011. "How Should We Regulate Nanotechnology? Perceptions of Leading U.S. Nano-scientists." Paper Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

376. Kim, Youngjae, **Elizabeth A. Corley** and **Dietram A. Scheufele**. January, 2011. "Should we Regulate Nanotech at the Local, National, or International Level." Paper Presentation. All Hands Meeting for the Center for Nanotechnology in Society at ASU, Tempe, AZ.

377. Klochikhin, Evgeny A. and **Philip Shapira**. October, 2012. "Giants in Small Worlds? Innovation and Nanotechnology Development in China and Russia." Presentation. Society for the Study of Nanoscience and Emerging Technologies (S.NET), the Netherlands.

378. Klug Boonstra, Sherri. February 20, 2014. "Citizen Science! Goes to Mars!" Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.

379. Kullman, Joe and **Joel Garreau**. March 19, 2010. "Facts or Hype: What is the Media Telling Us About Nano and Other New Technologies." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

380. Ladwig, Peter, Doo-Hun Choi, Ashley A. Anderson, Michael A. Cacciatore, Xuan Liang, **Dominique E. Brossard**, et al. May, 2011. "Coverage of Emerging Technologies: A Comparison Between Print and Online Media." Paper Presentation. Annual Convention of the International Communication Association, Boston, MA.

381. Ladwig, Peter, Kajsa E. Dalrymple, **Dietram A. Scheufele**, **Dominique E. Brossard** and **Elizabeth A. Corley**. August, 2010. "Perceived or Factual Knowledge? Comparing Operationalizations of Science Knowledge." Paper Presentation. Annual Convention of the Association for Education in Journalism & Mass Communication, Denver, CO.

382. Laurent, Brice and **Erik Fisher**. August, 2007. "The Integration of Public Input into the American Nanotechnology Federal Program: Meanings and Contradictions." Presentation. Third Living Knowledge conference, Ecoles des Mines, Paris, France.

383. Li, Nan, **Dominique E. Brossard** and **Dietram A. Scheufele**. December 2013. "What do Government and Non-profit Stakeholders Want to Know about Nuclear Fuel Cycles? A Semantic Network Analysis Approach." Presentation. Annual Convention of the Society for Risk Analysis (SRA). Baltimore, MD.

384. Li, Nan, Heather Akin, Leona Yi-Fan Su, **Michael A. Xenos**, **Dietram A. Scheufele** and **Dominique E. Brossard**. June 2013. "Using Twitter to Assess Public Opinion about Nuclear Power Pre- and Post-Fukushima." Presentation. Annual Convention of the International Communication Association. London, United Kingdom.

385. Li, Nan, Leona Yi-Fan Su, Xuan Liang, **Dominique E. Brossard** and **Dietram A. Scheufele**. May 2014. "Policy Decision-making, Public Involvement and Nuclear Energy: What do Expert Stakeholders Think and Why." Presentation. Annual Convention of the International Communication Association (ICA). Seattle, WA.

386. Liang, Xuan, Leona Yi-Fan Su, Sara K. Yeo, **Dietram A. Scheufele**, **Dominique E. Brossard**, **Michael A. Xenos**, **Paul Nealey** and **Elizabeth A. Corley**. 2014. "Building Buzz (Scientists) Communicating Science in New Media Environments." Presentation. 13th Annual International Public Communication of Science and Technology (PCST) Conference. Salvador, Brazil.

387. **Libaers, Dirk**. September, 2006. "The Role and Contribution of Foreign-born Scientists and Engineers to the U.S. Nano Science and Technology Research Enterprise." Presentation. 2006 Technology Transfer Society Conference, Atlanta, GA.

388. Lidberg, Shannon. November, 2008. "Who Benefits? India's National Design Policy and the Setting of Designers' Priorities." Presentation. CNS-ASU Workshop on Nanotechnology, Equity and Equality, Tempe, AZ.

389. Lidberg, Shannon. August, 2008. "Design Policy Around the Globe: How Developed and Emerging Markets are Using Design for Economic Competitiveness." Poster presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.

390. Lidberg, Shannon. March, 2008. "Examining Potential Futures: A Designer's Toolbox for Identifying Potential Social and Cultural Implications." Presentation. ST Global Conference, Washington, DC.

391. **Lindsay, Stuart**. March 23, 2006. "Humankind's Future on the Head of a Pin: Nanotechnology - What it is, what it can do." Talk. CNS-ASU Science Cafe, Mills End Coffee Shop, Tempe, AZ.

392. **Lobo, Jose**. November 09, 2011. "How Green is Nano." Presentation. Society for the study of Nanoscience and Emerging Technologies 2011 Conference, Tempe, AZ.

393. **Lobo, Jose** and **Deborah Strumsky**. March, 2010. "What Can Be Learned From Successful Nanotechnology Patent Applications." Presentation. Transatlantic Workshop on Nanotechnology Innovation and Policy, Atlanta, GA.

394. **Lynch, John** and Matthew Cooper. February 17, 2012. "Science and Religion: How Can We Peace It All Together." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

395. **Lynch, John** and **Norbert Samuelson**. February 20, 2009. "Evolution and Faith Revisited: Can the Two be Reconciled." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

396. Ma, Tingting, **Alan L. Porter**, Jud Ready, Chen Xu, Lidan Gao, Wenping Wang, et al. May, 2011. "A Technology Opportunities Analysis Model: Applied to Dye-Sensitized Solar Cells for China." Presentation. 4th International Seville Conference on "Future-Oriented Technology".

397. **Mahootian, Farzad**. October, 2012. "Innovation by Disequilibrium." Presentation. Society for the Study of Nanoscience and Emerging Technologies, University of Twente, Twente, the Netherlands.

398. **Mahootian, Farzad**, **Erik Fisher** and **Michael Gorman**. March, 2012. "Self-Reflexive Science and Emergence of Microtrading and Integration Zones in Bio-, Info- and Nano-Science Research Labs." Presentation. 3rd Annual Conference on Empirical Philosophy of Science, Aarhus University, Denmark.

399. **Mahootian, Farzad** and Tara-Marie Linne. October, 2012. "Jung and Laboratory Ethnographies: Lab as Locus of Transformative Research." Presentation. Jung in the Academy and Beyond 100 Years Later, Fordham University, New York, NY.

400. **Maracas, George**, **Patrick Phelan** and **Braden Allenby**. September 19, 2008. "Is Nanotechnology Good for Sustainability or Not." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

401. **Marchant, Gary E.** July, 2006. "Nanotechnology Regulation: The United States Approach." Presentation. Conference on New Global Regulatory Frontiers: Evaluating what will work for Nanotechnology, Monash University, Melbourne, Australia.

402. Maricle, Genevieve. January, 2008. "The State of Policy and Socio-Economic Research." Presentation. American Meteorological Society Annual Meeting, New Orleans, LA.

403. Maricle, Genevieve. December, 2007. "Shaping Science: Turning Science Studies into Science Action." Presentation. Center for Science and Technology Policy Research Noontime Seminar Series, Boulder, CO.

404. Maricle, Genevieve. October, 2007. "Wrestling with Engagement: Tools for Iterating Intervention in STS." Presentation. Society for the Social Studies of Science Annual Meeting, Montreal, Canada.

405. **McBeath, Michael**. September 19, 2013. "Citizen Science! Executing an Effective and Ethical Citizen Science Study." Presentation. CNS-ASU Science Café. Arizona Science Center. Phoenix, AZ.

406. **McCray, Patrick**. November 8, 2013. "The Visioneers: In Pursuit of Space Colonies, Nanotechnologies, and a Limitless Future." Presentation. CNS-ASU Occasional Speaker. Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

407. **McGregor, Joan** and **Jameson Wetmore**. August, 2008. "Researching and Teaching the Ethics and Social Implications of Emerging Technologies." Poster presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.

408. McKeon, Patrick. September 23, 2008. "State-Level Nanotechnology Policy Initiatives and Implications for Georgia." Presentation. Nano@Tech, Georgia Institute of Technology, Atlanta, GA.

409. McKeon, Patrick. 2008. "State-Level Nanotechnology Policy Initiatives and Implications for Georgia." Presentation. Fresh Perspectives on Economic Development, Atlanta, GA.

410. **Meldrum, Deirdre** and **Jameson Wetmore**. October 19, 2007. "Less is More Technology: Is Smaller and Cheaper Always Better." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

411. Meng, Yu. April, 2009. "Female Involvement in Nanotechnology Patenting: Does it make a Difference." Presentation. Workshop on Original Policy Research, School of Public Policy, Georgia Institute of Technology, Atlanta, GA.

412. Merkerk, Rutger van, **David H. Guston** and **Ruud Smits**. November, 2006. "An International Comparison of Recent Technology Assessment Approaches: Bypassing Collingridge." Presentation. 4S Conference (Society for Social Studies of Science), Vancouver, British Columbia, Canada.

413. Miao, Liao. 2012. "Laboratory Collaboration as a Way of Practicing Nano-ELSI." Presentation. Institute for Science, Technology, and Society, Tsinghua University, Beijing, P.R. China.

414. Miao, Liao. 2012. "Humanistic Cultivation in the Sciences: Why Do Laboratory Engagements Matter." Presentation. Arizona State University, Tempe, AZ.

415. **Michelaki, Kostalena** and **Sandwip Dey**. February 18, 2011. "Invention Then and Now: Ancient and Modern Materials." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

416. **Miller, Clark A.** 2012. "Nanotechnology, the Brain, and the Future." Keynote Lecture. Integrating Nanotechnology with Cell Biology and Neuroscience Symposium, University of New Mexico, Albuquerque, NM.

417. **Miller, Clark A.** September, 2010. "Readying Citizens for Anticipatory Governance: A Challenge for Science Museums." Presentation. NISE Network Meeting, San Francisco, CA.

418. **Miller, Clark A.** March, 2010. "Innovation: Thoughts on Science, Technology, Transformation, and Valuation." Talk. Manifolds-A Social Innovation Symposium, Fergus, Canada.

419. **Miller, Clark A.** 2010. "Systems Integration: The Human and Social Dimensions of Energy System Transformation." Talk. Advisory Meeting, Directorate of Mathematical and Physical Sciences, National Science Foundation, Washington, DC.

420. **Miller, Clark A.** 2009. "Themes in Nanotechnology in Society Research." Talk. Nanoscale Informal Science Education Annual Meeting, San Francisco, CA.

421. **Miller, Clark A.** 2009. "Nanotechnology: Environment, Health, and Safety." Talk. Semiconductor Environment, Safety, and Health Association, Scottsdale, AZ.

422. **Miller, Clark A.** April, 2007. "Commentary: The Law and the Future Brain." Presentation. U.S. District Court and Sandra Day OConnor College of Law, Arizona State University, Tempe, AZ.

423. **Miller, Clark A.** December 09, 2006. "Boundary Organizations: Strategies for Linking Knowledge to Action." Presentation. Workshop on Boundary Organizations, Tempe, AZ.

424. **Miller, Clark A.** November 16, 2006. "Informing Anticipatory Governance of New and Emerging Technologies through Nanotechnology in Society Research." Presentation. Nanoscale Informal Science Education Network (NISE Net).

425. **Miller, Clark A.** October, 2006. "Reflexive, Anticipatory Governance of Science and Technology." Roundtable presentation. Public Administration and Challenges of Emerging Technologies Roundtable, 2006 NASPAA Annual Conference: The Future of the Public Sector, National Association of Schools of Public Administration and A, Minneapolis, MN.

426. **Miller, Clark A.** June, 2006. "Think Differently! Strategies for Success in Nano." Presentation. Food Research Institute, University of Wisconsin-Madison, Madison, WI.

427. **Miller, Clark A.** April 19, 2006. "Nanotechnology in Society Education: Teaching the Mental Habits of Social Engineers and Critical Citizens." Presentation. Education in Nanoscience and Engineering Symposium, 2006 Spring Meeting, Materials Research Society, San Francisco, CA.

428. **Miller, Clark A.** March, 2006. "Nanotechnology in Society." Presentation. Ohio State University, Columbus, OH.

429. **Miller, Clark A.** and **Ira Bennett.** March, 2009. "Imagining the Future: Can Science Fiction Help Us Govern Technology." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

430. **Miller, Clark A.** and **Ira Bennett**. April, 2007. "Science Fiction as Technology Assessment: Some Preliminary Thoughts on Anticipatory Governance for the Rest of Us." Presentation. Cornell University, Ithaca, NY.

431. **Miller, Thaddeus R.** May 2014. "Futurescape City Tours: Public Engagement in Science and Technology." Presentation. CityWise: A Public Forum with the Toulan School. Portland, OR.

432. **Miller, Thaddeus R.** February 26, 2014. "Futurescape City Tours: Public Engagement in the City." Presentation. President’s Umbrella Tours. PSU.

433. **Moore, Ana L.** September 27, 2006. "Renewable Energy Through Photosynthesis." Talk. CNS-ASU Science Cafe, Friendly House, Phoenix, AZ.

434. **Newman, Nils**. November, 2006. "Nanotechnology Research Mapping and Assessment." Presentation. STI Indicators Conference, Leuven, Belgium.

435. **Newman, Nils**. June 07, 2006. "Where is Nano Going?" Presentation. Advancing Measures of Innovation: Knowledge Flows, Business Metrics, and Measurement Strategies Workshop, National Science Foundation, Arlington, VA.

436. **Newman, Nils**, **Ismael Rafols**, **Jan Youtie**, **Alan L. Porter** and Luciano Kay. November, 2011. "Patent Overlay Mapping: Visualizing Technological Distance." Panel Presentation. Nanotechnology, Innovation, and Commercialization: Learning about a Technology Cycle through Patent Data, Patent Statistics for Decision Makers 2011.

437. **Panzda, Kristo**, Paul Ellwood and **Erik Fisher**. October, 2009. "From Social Aspirations to Organizational Capability: Identifying Micro-Foundations and the Role of Strategizing." Presentation. Interactive Strategy Work-in-Progress Workshop/SMS Pre-Conference: Advancing Strategy Process Research, Washington, DC.

438. Pei, R., **Alan L. Porter** and P. Gao. December, 2010. "Profiling a Decade of Chinese Nano-Biomedical Science Research." Presentation. IEEE International Engineering and Engineering Management (IEEM), China.

439. **Petrucci, Darren** and **Kelly Campbell Rawlings**. February 15, 2013. "Evolving in the Nano City: Urban Design, Urban Culture and Forces of Change." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

440. **Petrucci, Darren** and Rider W. Foley. February 28, 2014. "New Tools for Science Policy - Design Thinking, Sustainability and the Future City." Presentation. Consortium for Science, Policy & Outcomes. Washington, DC.

441. Philbrick, Mark. September, 2009. "Operationalizing Anticipatory Governance: Steering Emerging Technologies towards Sustainability." Presentation. Inaugural Meeting of the Society for the Study of Nanoscale and Emerging Technologies. September 8-11, 2009, Seattle, WA.

442. Philbrick, Mark. 2009. "The National Citizens Technology Forum: Lessons for the Future." Presentation. Annual Meeting of the Society for the Social Studies of Science. October 28-November 1, 2009, Washington, DC.

443. **Porter, Alan L.** December, 2010. "Profiling and Knowledge Tracking." Presentation. Chinese Academy of Sciences Library, Beijing.

444. **Porter, Alan L.** November, 2009. "Assessing Nanotechnology: Research Metrics and Maps." Presentation. American Evaluation Association Annual Conference, Orlando, FL.

445. **Porter, Alan L.** August, 2009. "Locating Nanotechnology among the Disciplines, Nano @ Tech."

446. **Porter, Alan L.** November 30, 2007. "Trends in Data Treatment in the United States." Keynote presentation. International Conference on Competitive Intelligence, Carlos III University of Madrid, Madrid, Spain.

447. **Porter, Alan L.** October, 2007. "Public Lecture." Institute for S&T Information, Beijing, China.

448. **Porter, Alan L.** November 15, 2006. "Mining Patents and Research Publications to Improve Technology Management: Nano Illustrations." Presentation. 2nd PATINEX Conference, Seoul, South Korea.

449. **Porter, Alan L.**, David J. Schoeneck, **Ajay S. Bhaskarabhatla**, **Jan Youtie** and **Dirk Libaers**. May, 2006. "Explorations in Research and Innovation Systems Assessment: Where Is Nano Going?" Presentation. The Atlanta Conference on Science and Technology Policy 2006 US-EU Policies for Research and Innovation, Atlanta, GA.

450. **Porter, Alan L.**, David J. Schoeneck, **Nils Newman**, **Philip Shapira**, **Jan Youtie** and Rich Kolar. September, 2006. "Nano R&D Profiles: A Deeper Look." Presentation. International Conference on Science & Technology Indicators, Leuven, Belgium.

451. **Porter, Alan L.**, David J. Schoeneck, **Philip Shapira**, **Jan Youtie** and Rich Kolar. September, 2006. "Defining the Nanotechnology Domain in Realtime Technology Assessment." Presentation. Presented at 2006 Technology Transfer Society Conference, Atlanta, GA.

452. **Porter, Alan L.** and **Ismael Rafols**. 2009. "Measuring and Mapping Interdisciplinary in Six Research Fields Over Time (1975-2005)." Presentation. ISSI Conference, Rio de Janeiro.

453. **Porter, Alan L.** and **Ismael Rafols**. September, 2008. "Science Overlay Maps: Easy-to-use Tools to Help Visualize and Track Bodies of Research, A Deeper Look at the Visualization of Scientific Discovery in the Federal Context." Presentation. Workshop at the National Science Foundation, Arlington, VA.

454. **Porter, Alan L.**, **Jan Youtie**, **Philip Shapira**, David J. Schoeneck, Li Tang and Pratik Mehta. April, 2007. "Profiling Nano R&D." Presentation. Presented at Nano-Giga Challenges, Phoenix, AZ.

455. **Porter, Alan L.** and **Jayesh Patil**. March, 2007. "Where Is Nano Going?" Presentation. Nano-Giga Challenges, Phoenix, AZ.

456. **Porter, Alan L.** and Lu Huang. December, 2010. "Tech Mining and Forecasting of Innovation Pathways, as Applied to Nano-enhanced Biosensors." Presentation. International Conference on Technological Innovation and Competitive Technical Intelligence, Beijing.

457. **Porter, Alan L.**, **Martin Meyer** and **Ismael Rafols**. May, 2008. "The Cognitive Geography of Nanotechnologies: Location and Knowledge Flows of Nano-Research in the Map of Science." Presentation. Presentation at the NBER Conference on Emerging Industries: Nanotechnology and NanoIndicators, Cambridge, MA.

458. **Porter, Alan L.**, **Nils Newman** and **Jan Youtie**. October, 2009. "Tech Mining, VantagePoint, and Science Overlay Mapping." Presentation. Pre-conference Workshop of 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

459. **Porter, Alan L.**, **Philip Shapira** and **Jan Youtie**. October, 2008. "Nano Social Science: An Emerging Specialization." Presentation. Nanotechnology and Society: Emerging Opportunities & Challenges Networks, Risk and Knowledge Sharing, University of Massachusetts, Amherst, MA.

460. **Porter, Alan L.**, **Philip Shapira** and **Jan Youtie**. September, 2006. "Defining the Nanotechnology Domain in a Real Time Technology Assessment." Presentation. Technology Transfer Society Annual Conference, Atlanta, GA.

461. **Porter, Alan L.** and Stephen Carley. November, 2010. "Three Generation Research Knowledge Tracking: Publication and Citation Analyses." Demonstration Workshop. American Evaluation Association Conference, San Antonio, TX.

462. **Porter, Alan L.**, Tingting Ma and Ying Gao. November, 2011. "Tracking Emergence of Nanotechnology Dye-Sensitized Solar Cells (DSSCs)." Panel Presentation. Nanotechnology, Innovation, and Commercialization: Learning about a Technology Cycle through Patent Data, Patent Statistics for Decision Makers 2011.

463. **Porter, Alan L.**, Tingting Ma and Ying Guo. November, 2011. "Patents+ in Newly Emerging Science and Technology: Tracking Emergence of Dye-Sensitized Solar Cells." Presentation. Patent Statistics for Decision Makers, Alexandria, VA.

464. **Porter, Alan L.**, Tingting Ma and Ying Guo. June, 2011. "Multiple Perspective Research Profiling: Illustrated for Dye-Sensitized Solar Cells." Proceedings. International Council for Scientific and Technical Information 2011 Summer Conference.

465. **Porter, Alan L.**, Ying Guo and Lu Huang. October 12, 2010. "Integrating Patent Analysis with R and D and Business Analyses to Forecast Innovation Prospects: Nano-Enhanced Solar Cells." Presentation. Patent Information Users Group PIUG 2010 Northeast Conference, New Brunswick, NJ.

466. **Porter, Alan L.**, Ying Guo, Lu Huang and Douglas K. R. Robinson. November, 2011. "Forecasting Innovation Pathways: The Case of Nano-enhanced Solar Cells." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

467. **Porter, Alan L.**, Ying Guo, Lu Huang and Douglas K. R. Robinson. December, 2010. "Forecasting Innovation Pathways: The Case of Nano-enhanced Solar Cells." Paper Presentation. International Conference on Technological Innovation and Competitive Technical Intelligence, Beijing.

468. **Posner, Jonathan** and **Jameson Wetmore**. April, 2009. "Technologies of Distraction: Mobile Phones, iPods, and E-mail." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

469. **Rafols, Ismael** and **Alan L. Porter**. October, 2009. "Interdisciplinary in Nanoscience: What is the Nano Field and how does it Share its Knowledg." Presentation. 2nd Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.

470. **Rafols, Ismael**, **Alan L. Porter**, **Jan Youtie** and Li Tang. September, 2008. "Nanotechnology as a Multi-polar Science." Presentation. Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.

471. **Rafols, Ismael**, **Alan L. Porter** and **Loet Leydesdorff**. October, 2009. "Science Overlay Maps: A New Tool for Research Evaluation." Presentation. 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

472. **Rafols, Ismael**, **Alan L. Porter** and **Loet Leydesdorff**. 2009. "The Use of Global Maps of Science in Management and Policy Contexts." Presentation. Accepted. ENID Indicators Conference 2010.

473. **Rafols, Ismael**, **Alan L. Porter** and **Martin Meyer**. September, 2009. "A Model of Interdisciplinarity in Nanotechnology: How Local Knowledge Integration Links a Globally Fragmented Field." Presentation. SNET Conference.

474. **Rafols, Ismael**, **Martin Meyer**, Jung-Hwan Park and **Alan L. Porter**. August, 2008. "The Cognitive Geography of Nanotechnologies: Location and Knowledge Flows of Nano-Research in the Map of Science." Presentation. Presented at Society for Social Studies of Science (4S), Rotterdam, the Netherlands.

475. **Randles, Sally** and **Jan Youtie**. November, 2011. "Responsible Innovation and Responsible Governance." Roundtable Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

476. **Randles, Sally**. October 22, 2013. "Toward an Institutionalist Sociology of Responsible Innovation." Presentation. CNS-ASU Occasional Speaker Presentation. Center for Nanotechnology in Society. Arizona State University. Tempe, AZ.

477. **Rittmann, Bruce** and **Dawn Schwenke**. September 18, 2009. "Ending Age-Related Disease: How Will Our Lives Change if we're Healthier Longer." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

478. **Robert, Jason S.** January, 2009. "Technology and Human Enhancement: Whats the Connectio." Presentation. Midwestern University, Glendale, AZ.

479. **Robert, Jason S.** June, 2007. "Braving the Brain." Presentation. Canadian Bioethics Society, Toronto, Canada.

480. **Robert, Jason S.** May, 2007. "Cyborgs, Ratbots, and Bionic Humans: Wiring Brains to Machines." Presentation. Discovery Center, Halifax, Nova Scotia, Canada.

481. **Robert, Jason S.** May, 2007. "Neural Interface Systems: Ethical and Conceptual Issues at the Frontier of Brain Repair." Presentation. Neuroethics Program, Stanford Center for Biomedical Ethics, Palo Alto, CA.

482. **Robert, Jason S.** April, 2007. "Problematizing Enhancement." Presentation. Dartmouth College, , N, Hanover, NH.

483. **Robert, Jason S.** February, 2007. "Braving the World of Neurotechnology." Presentation. Health Law Institute Seminar Series, Dalhousie University, Nova Scotia, Canada.

484. **Robert, Jason S.** October, 2006. "Brain Repair and Neural Enhancement." 4S Conference (Society for Social Studies of Science), Vancouver, Canada.

485. **Robert, Jason S.** October, 2006. "Nanotechnology, Neurotechnology, and Society." Presentation. Institute of Nanotechnology Symposium, Northwestern University, Evanston, IL.

486. **Robert, Jason S.** October, 2006. "Forbidden Science Boundaries on New Emerging Science and Technology." Presentation. Jewish Women's Symposium, Tempe, AZ.

487. **Robert, Jason S.** August, 2006. "Controversial Science, Controversial Scientist." Presentation. NABIS Conference, Chicago, IL.

488. **Rogers, Juan D.** November 05, 2011. "Program Level Assessment of Outcomes and Impacts of Research Performance of Centers." Session. Evaluation of a Nano Science and Technology Centers Program: Mixed Methods Approach to Assessing Its Realization of Policy Objectives, American Evaluation Association.

489. **Rogers, Juan D.** December, 2010. "Publication Patterns and Collaborative Work at NSECs." Presentation. 2010 NSF Nanoscale Science and Engineering Grantees Conference, Arlington, VA.

490. **Rogers, Juan D.** October, 2009. "Nanotechnology Research Centers: What Value do they add? What Values do they Operate on." Presentation. 2nd Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.

491. **Rogers, Juan D.**, **Jan Youtie** and Luciano Kay. November, 2011. "Commercialization Patterns of Nanoscale Science and Engineering Centers: The Cafe of Polymer v. Clean-Room based Technology." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

492. **Rogers, Robert P. Jr.** June, 2008. "Research Centers as Policy Tools in Emerging Technologies: Scientific and Technical Human Capital in Nanotechnology Centers in the U.S." Presentation. Chinese Academy of Sciences, Beijing, China.

493. **Rogers, Robert P. Jr.** April, 2007. "The Role of Research Centers in the US Nanotechnology Initiative." Presentation. Workshop on Social Dimensions of Nanotechnology, Paris, France.

494. **Roland, Kenneth** and **Antonio Garcia**. September 16, 2011. "Vaccines: Can they give us a Disease-Free World." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

495. Runge, Kristin R., Sara K. Yeo, **Dominique E. Brossard, Dietram A. Scheufele** and **Michael A. Xenos**. May, 2013. "God, Money, Politics, and Science: The Role of Religion, Conservative Economic and Liberal Social Attitudes on Perception of Science in the Last Weeks of the 2012 U.S.

Presidential Election." Paper Presentation. The Annual Convention of the American Association for Public Opinion Research, Boston, MA.

496. Rushforth, Richard and Rider W. Foley. Accepted 2014. "Nanotechnology versus the Dragon: CVOC Contaminated Groundwater and the Socially Contested M52 Superfund Site." Presentation. Ninth International Conference on Remediation of Chlorinated and Recalcitrant Compounds. Monterey, CA. May 19-22.

497. **Samuelson, Hava** and **Braden Allenby**. April 16, 2010. "Upgrading Ourselves: Can Technology Make Us Better." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

498. **Sarewitz, Daniel.** October, 2008. "Paths to Outcomes Based Innovation Policy." Presentation. National Institutes of Health Science of Science Management Meeting, Bethesda, MD.

499. **Sarewitz, Daniel**. September, 2008. "Science Policy and Innovation." Presentation. Presidential Council of Advisors on Science and Technology, Washington, DC.

500. **Sarewitz, Daniel**. November 26, 2007. "New Tools for Science Policy Making." Presentation. Harvard University, Science, Technology, and Society Circle, Cambridge, MA.

501. **Sarewitz, Daniel**. October, 2007. "Anticipatory Governance of Emerging Technologies: Competing Values, Irreducible Uncertainties, and Transformation Innovation." Presentation. University of Oviedo, Oviedo, Spain.

502. **Sarewitz, Daniel**. October, 2007. "Technology and Effectiveness in Contested Political Settings, Center for Research on Energy, Environment, and Transportation." Presentation. CIEMAT, Madrid, Spain.

503. **Sarewitz, Daniel**. April 16, 2007. "Political Effectiveness in Science and Technology." Presentation. Workshop on Science and Social Values, Center for Interdisciplinary Research, Bielefeld University, Bielefeld, Germany.

504. **Sarewitz, Daniel**. March, 2007. "Connecting Research to Social Outcomes." Presentation. Presentation to the University of Nebraska Board of Regents, Lincoln, NE.

505. **Sarewitz, Daniel**. January, 2007. "Ways of Knowing Novel Materials, Symposium on Environmental Effects of Novel Materials and Processes." Presentation. Royal Commission on Environmental Pollution, London, England.

506. **Sarewitz, Daniel**. August, 2006. "Policy Perspectives." Panel. Meta-Analysis: Emerging Themes in Science Policy. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.

507. **Sarewitz, Daniel**. February, 2006. "Tools for Goldilocks: Rethinking the Relationships among Research, Funding, and Progress." Presentation. AAAS Annual Meeting, Symposium on The Goldilocks Dilemma Facing Science Funding: Can it be Just Righ, St. Louis, MO.

508. **Sarewitz, Daniel** and **Roy Curtis**. May 18, 2007. "Forbidding Science: Are There Things We Just Shouldn't Know." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

509. **Scheufele, Dietram A.** February 15, 2014. "Trust Deficit Models: The New Dead End for Communicating Controversial Science?" Presentation. American Association for the Advancement of Science (AAAS). Chicago, IL.

510. **Scheufele, Dietram A.** February 1, 2014. "Communicating Science in New Information Environments: Challenges at the Interface of Science, Politics and Media." Presentation. Keynote at DGPuK/Universität Zürich Conference. Zürich, Switzerland.

511. **Scheufele, Dietram A.** January 17, 2014. "Why Polarized Debates used to be Good for us." Presentation. TEDxUWMadison. Madison, WI.

512. **Scheufele, Dietram A.** December 5, 2013. "The Science of Communicating Nanoscience." Presentation. Keynote Presentation at NSF Nanoscale Science and Engineering Grantees Conference. Arlington, VA.

513. **Scheufele, Dietram A.** November 26, 2013. "Trollish Behavior and the Future of Online Comments." Presentation. Panelist at Society of Professional Journalists. Madison, WI.

514. **Scheufele, Dietram A.** November 15, 2013. "A Brave New (Online) World: Emerging Technologies at the Intersection of Science, Policy, and Rapidly Changing Media Environments." Presentation. Neuroscience & Public Policy Program, Kavli Lecture. Madison, WI.

515. **Scheufele, Dietram A.** October 7, 2013. "From Behavior Change Research to Program Design." Presentation. Association of Energy Services Professionals. Madison, WI.

516. **Scheufele, Dietram A.** September 23, 2013. "Science Communication as Political Communication." Presentation. Sackler Colloquium on the Science of Science Communication II. National Academy of Sciences. Washington, DC.

517. **Scheufele, Dietram A.** July 9, 2013. "Public Engagement with Science." Presentation. Webinar for Association of Science-Technology Centers (ASTC). Washington, DC.

518. **Scheufele, Dietram A.** June 20, 2013. "The Future of (Environmental) Communication as a Discipline." Presentation. Panelist at International Communication Association Annual Conference. London, England.

519. **Scheufele, Dietram A.** May 20, 2013. "Public Engagement in Science (Policy): Opportunities and Dead Ends." Presentation. Annual Conference on Governance of Emerging Technologies: Law, Policy, and Ethics. Sandra Day O'Connor College of Law. Arizona State University. Tempe, AZ.

520. **Scheufele, Dietram A.** May 9, 2013. "Barriers to Addressing Our Climate and Energy Challenges." Presentation. Panelist at Wisconsin Academy of Science, Arts & Letters. Madison, WI.

521. **Scheufele, Dietram A.** May 3, 2013. "A Brave New (Online) World: Emerging Technologies at the Intersection of Science, Policy, and Rapidly Changing Media Environments." Presentation. Emerging Technologies at the Intersection of Science, Policy, and Rapidly Changing Media Environments. Arizona State University. Tempe. AZ.

522. **Scheufele, Dietram A.** 2013. "Communicating Science in Social Settings." Presentation. Proceedings of the National Academy of Sciences.

523. **Scheufele, Dietram A.** March, 2009. "Public Understanding of and Attitudes toward Nanotechnology: An Overview." Presentation. Presented at the Nanotechnology and Public: Data for Decision Makers briefing to the Congressional Nanotechnology Caucus, Washington, DC.

524. **Scheufele, Dietram A.** February, 2008. "A Comparative Look at Markets, Media, and Emerging Attitudes about Nanotechnology." Panel. The Annual Convention of the American Association for the Advancement of Science, Boston, MA.

525. **Scheufele, Dietram A.** February, 2008. "Engaging Religious Audiences on Nanotechnology." Presentation. Annual Convention of the American Association for the Advancement of Science, Boston, MA.

526. **Scheufele, Dietram A.** May, 2007. "Public Perceptions and Understanding of Nanotechnology." Presentation. Center for Nanoscale Science and Technology (CNST) Nanotechnology Workshop, University of Illinois, Urbana-Champaign, IL.

527. **Scheufele, Dietram A.** March 16, 2007. "Public Perceptions and Understandings of Nanotechnology." Presentation. Nano and Giga Challenges in Electronics and Photonics conference, Tempe, AZ.

528. **Scheufele, Dietram A.** March 08, 2007. "Risky Business? Risk Perception & Nano Business." Panel. Symposium, Illinois Institute of Technology, Center on Nanotechnology and Society, Chicago, IL.

529. **Scheufele, Dietram A.** January 30, 2007. "How Media and Audiences Make Sense of Scientific Issues: The Case of Nanotechnology." Presentation. CMCIS Research Lecture Series, University of South Carolina, Columbia, SC.

530. **Scheufele, Dietram A.** 2007. "Understanding the Opinion and Communication Dynamics Surrounding Nanotechnology." Presentation. Symposium on the Social Studies of Nanotechnology, University of Pennsylvania, Wharton School of Business & Chemical Heritage Foundation, Philadelphia, PA.

531. **Scheufele, Dietram A.** 2006. "Influences on Public Opinion about Nanotechnology." Presentation. Public Participation in Nanotechnology & Nanoscale Science workshop, National Nanotechnology Coordination Office, Washington, DC.

532. **Scheufele, Dietram A.** 2006. "It's Not All About Information: Exploring People's Attitudes Toward New Technologies." Lecture. Science, Democracy, and Public Policy colloquium, La Follette School of Public Affairs, University of Wisconsin, Madison, WI.

533. **Scheufele, Dietram A.** 2006. "Public Communication and Policy Making About Nanotechnology." Talk. Nano Workshop for Policy Makers, Materials Research Science and Engineering Center and Engineering Center on Nanostructured Interfaces, University of Wisconsin, Madrid, WI.

534. **Scheufele, Dietram A.** 2006. "Successful Public Communication about Nanotechnology." Talk. The Baldwin Nano Workshop for Journalists, Materials Research Science and Engineering Center and Engineering Center on Nanostructured Interfaces, University of Wisconsin, Madison, WI.

535. **Scheufele, Dietram A.** 2006. "Successful Public Communication about Nanotechnology." Talk. Integration of Societal Implications into Science workshop, U.S. Department of Energy, Washington, DC.

536. **Scheufele, Dietram A.**, **Dominique E. Brossard** and **Kajsa E. Dalrymple**. November 16, 2007. "Whose Voice Matters Most? Public Opinion about the Role of Scientists, Religious Groups, Officials, and Citizens in Public Discourse about Science." Presentation. Annual Convention of the Midwest Association for Public Opinion Research, Chicago, IL.

537. **Scheufele, Dietram A.**, **Elizabeth A. Corley**, **Elliott D. Hillback**, Tsung-Jen Shih, **Sharon Dunwoody** and **David H. Guston**. October 13, 2007. "Nano Attitudes among Scientists and the Public." Presentation. Annual Convention of the Society for Social Studies of Science, Montreal, Canada.

538. **Scheufele, Dietram A.**, **Elizabeth A. Corley**, Tsung-Jen Shih, **Kajsa E. Dalrymple** and **Shirley S. Ho**. November, 2008. "Public Opinion Dynamics Surrounding Emerging Technologies in Europe and the U.S." Presentation. Annual convention of the Midwest Association for Public Opinion Research.

539. Schuurbiers, Daan. May 04, 2009. "In and Out of the Lab." Lab Meeting. Center for Bioenergy and Photosynthesis, Arizona State University, Tempe, AZ.

540. Schuurbiers, Daan. January 19, 2009. "Bugs in the Petri Dish and Beyond - Results from a Midstream Modulation Study in a Microbiology Lab in Delft." Presentation. STIR Workshop 1: Constructing Foundations, Tempe, AZ.

541. Schuurbiers, Daan. January 17, 2009. "Can Shadows Shed Light." Presentation. STIR Workshop 1: Constructing Foundations, Tempe, AZ.

542. Schuurbiers, Daan. January 15, 2009. "Midstream Modulation as Part of a PhD on Social Responsibility in Science." Presentation. CNS All Hands Meeting, Tempe, AZ.

543. Schuurbiers, Daan. September 19, 2008. "Of Social Responsibility and Scientific Practice - Midstream Modulation in Two Microbiology Laboratories." Presentation. CSG Workshop "Doing Society and Genomics", Nijmegen, The Netherlands.

544. **Seager, Thomas P.**, **Diane Gruber** and **David Uhlman**. November 18, 2011. "Will Our Products Last? Or is it Just a Thing of the Past." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

545. **Selin, Cynthia**. 2013. "Mediating Urban Imaginaries: Designing and Doing the Futurescape City Tours." Presentation. Society for the Social Studies of Science. San Diego, CA.

546. **Selin, Cynthia**. February, 2012. "Materializing Futures: How Artifacts, Prototypes and Objects Support Public Deliberation of Alternative Futures." Presentation. ASU School of Public Affairs Colloquium series, Tempe, AZ.

547. **Selin, Cynthia**. December, 2011. "Climate of Uncertainty: Civic Scenarios for Decision Making." Presentation. New Tools for Science Policy, CSPO, Washington, DC.

548. **Selin, Cynthia**. December, 2011. "Museums as Mediums for Engaging Citizens in Climate Change Adaptation Scenario Planning." Presentation. Dupont Summit 2011: Pressing Issues, Little Time, Washington, DC.

549. **Selin, Cynthia**. July, 2011. "Urban Foresight: Rethinking Technology in Complex Systems." Invited Talk. Joint Research Centre, European Commission, Ispra, Italy.

550. **Selin, Cynthia**. May, 2011. "Diagnosing Futures: How Scenarios Support Reflexive Governance of Socio-Technical Systems." Presentation. School of Sustainability. Future Scenarios of Nanotechnology. Society for the Study of Nanotechnology and Emerging Technologies, Tempe, AZ.

551. **Selin, Cynthia**. May, 2011. "Futuring and Foresight in Nanotechnology." Presentation. CNS Private Sector Engagement Workshop, Tempe, AZ.

552. **Selin, Cynthia**. March 14, 2011. "Rethinking Urban Governance: Knitting together Foresight and Sustainability." Presentation. Resilience, Innovation and Sustainability: Navigating the Complexities of Global Change, Tempe, AZ.

553. **Selin, Cynthia**. March, 2011. "Scenaric Thinking and Earth Systems Engineering and Management: A Generative Dialogue." Presentation. CESEM Distinguished Lecture Series, Arizona State University, Tempe, AZ.

554. **Selin, Cynthia**. March, 2011. "Diagnosing Futures: How Scenarios Support Reflexive Governance of Socio-Technical Systems." Presentation. School of Sustainability Brown Bag, Arizona State University, Tempe, AZ.

555. **Selin, Cynthia**. December, 2010. "Plausibility Reasoning and Nanotechnology Futures." Presentation. Society for Risk Analysis Annual Conference, Salt Lake City, UT.

556. **Selin, Cynthia**. November, 2010. "Foresight and Innovation." Presentation. Practices of Anticipatory Governance Workshop, Arizona State University, Tempe, AZ.

557. **Selin, Cynthia**. October, 2010. "Foresight and Scenarios." Presentation. Nanoscale Informal Science Education Network Annual Meeting, San Francisco, CA.

558. **Selin, Cynthia**. September, 2010. "Plausibilistic Reasoning in Nanotechnology Futures." Presentation. Society for the Study of Nanotechnology and Emerging Technologies, Darmstadt, Germany.

559. **Selin, Cynthia**. August, 2010. "Nanotechnology & Plausibility." Presentation. Society for the Social Studies of Science, Tokyo, Japan.

560. **Selin, Cynthia**. July, 2010. "The Future of Sustainable Phoenix." Presentation. Institute for the Future, Palo Alto, CA.

561. **Selin, Cynthia**. May, 2010. "The Future of Organizing." Presentation. Organization Design Forum Annual Meeting, Denver, CO.

562. **Selin, Cynthia**. April, 2010. "The Future of Nanotechnology." Presentation. Nanotechnology Law and Policy Course, Arizona State University, Tempe, AZ.

563. **Selin, Cynthia**. March, 2010. "Anticipation and Foresight." Presentation. International Study of the Long-term Impacts and Future Opportunities for Nanoscale Science and Engineering Worksho, Chicago, IL.

564. **Selin, Cynthia**. March, 2010. "Envisioning Solar To Fuels." Workshop on Energy Futures, Policy and Society. Arizona State University, Tempe, AZ.

565. **Selin, Cynthia**. November, 2009. "Plausibility." ASU Plausibility Workshop, Tempe, AZ.

566. **Selin, Cynthia**. October, 2009. "Diagnosing Futures." Presentation. Society for the Social Studies of Science, Washington, DC.

567. **Selin, Cynthia**. September, 2009. "Deliberation and Anticipation." Presentation. Society for the Study of Nanoscience and Emerging Technologies, Seattle, WA.

568. **Selin, Cynthia**. June, 2009. "Anticipation and Deliberation on the Nano City." Risoe National Laboratory, Denmark.

569. **Selin, Cynthia**. April, 2009. "Using Scenarios and Foresight to Manage Turbulence." Presentation. Organizational Design Forum, Tacoma, WA.

570. **Selin, Cynthia**. May, 2008. "Managing the Uncertainty of Nanotechnologies." Panel. Challenges to Law, Ethics, and Policy MakingConference at University of Padua, Padua, Italy.

571. **Selin, Cynthia**. February, 2008. "Evidencing the Future and other Dilemmas Working in the Future Tense." Presentation. Anthropology Department, Rice University, Houston, TX.

572. **Selin, Cynthia**. October 12, 2007. "Between Hope and Prudence: Experiments with Scenaric Learning." Presentation. Society for the Social Studies of Science, Annual Meeting, Montreal, Canada.

573. **Selin, Cynthia**. October, 2007. "The Future Tense: The Ways and Means of Anticipation." Presentation. CSPO Enlightening Lunch, Tempe, AZ.

574. **Selin, Cynthia**. September, 2007. "The Future of Nano & Bio Technologies." Panel. CRN conference on Challenges & Opportunities, Tucson, AZ.

575. Selin, Cynthia. July, 2007. "Real Time Technology Assessment: Anticipation, Integration, & Engagement." Presentation. Program on Technology Scenarios, Risoe, National Laboratory, Roskilde, Denmark.

576. Selin, Cynthia. April, 2007. "Hope and Prudence: Experiments in Scenaric Learning." Presentation. Futures of Life: Acquiring and Creating Anticipatory Knowledge, Cornell University, Ithaca, NY.

577. Selin, Cynthia. March 23, 2007. "Anticipatory Governance through Scenarios." Presentation. Workshop on Global Environmental Futures: Interrogating the Practice and Politics of Scenarios, Watson Institute for International Studies, Brown University, Providence, RI.

578. Selin, Cynthia. September, 2006. "The Center for Nanotechnology in Society." Presentation. NanoTX Conference, Dallas, TX.

579. Selin, Cynthia and Ira Bennett. November 19, 2006. "Visions of Nanotechnology." Talk. CNS-ASU Science Cafe, Changing Hands Bookstore, Tempe, AZ.

580. **Selin, Cynthia**, Kathryn de Ridder-Vignone and **David Tomblin**. June 13, 2014. "Deliberating Differently: The Futurescape City Tours." Presentation. CSPO New Tools for Science Policy Breakfast Seminar.

581. **Selin, Cynthia**, Kathryn de Ridder-Vignone and Gretchen Gano. 2013. "Incorporating the Temporal, Sensual and Material in Public Engagement with Nanotechnology." Presentation. Science and Its Publics: Exploring Emergent Forms of Public Engagement. University of California, Irvine.

582. **Selin, Cynthia** and **Prasad Boradkar**. 2013. "Prototyping Nanotechnology: Experiences with Design Education." Presentation. Invited talk, Technology and Innovation Management Research Seminar. Danish Technological University.

583. **Selin, Cynthia**, Sarah R. Davies, Gretchen Gano and **Angela Pereira**. December, 2010. "Material Deliberation: Tapping the Dilemmas of Water, Technology, and the City." Presentation. Spaces and Flows Conference, University of California, Los Angeles, CA.

584. **Selover, Nancy** and **Ray Quay**. October 21, 2011. "Will Arizona's Climate Change Leave us Thirsty." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

585. **Selover, Nancy** (Presenter) and Rider W. Foley (Moderator). October 17, 2013. "Citizen Science: the Community Collaborative Rain, Hail & Snow Network." Presentation. CNS-ASU Science Cafe. Arizona Science Center. Phoenix, AZ.

586. Shanley, Lea A. September, 2006. "Control and Access: GIS Legal Issues for Indian Nations in the United States." Presentation. URISA 2006 Annual Conference, Chicago, IL.

587. Shanley, Lea A. June, 2006. "Privacy and Security: Internet Publication of Digital Spatial Data and Land Records in Wisconsin." Presentation. Presentation at WLIA Regional Meeting on Privacy, Copyright, Data Distribution and GIS Law, Elkhart Lake, WI.

588. Shanley, Lea A. and Steve J. Ventura. August, 2007. "Land Records and Map Services: Internet Privacy Policies in Wisconsin." for URISA 2007Annual Conference, Chicago, IL.

589. **Shapira, Philip**. November 21, 2012. "Nanotechnology: Trajectories and Policies, Challenges in Science, Technology and Innovation Policy." Presentation. Executive Program, University of Manchester, United Kingdom.

590. **Shapira, Philip**. October 19, 2012. "The Future of Nanotechnology: History, Status, and Prospects." Presentation. OECD-HSE International Conference, Foresight for Innovative Responses to Grand Challenges, Moscow, Russia.

591. **Shapira, Philip**. March 27, 2012. "The Economic Contributions of Nanotechnology to Green and Sustainable Growth"." Presentation. OECD/NNI International Symposium on assessing the Economic Impact of Nanotechnology, Washington, DC.

592. **Shapira, Philip**. October 14, 2011. "The Emergence of Distributed Technology Assessment in the USA, Research Workshop: Foresight and Science, Technology and Innovation Policies: Best Practices." Panel. Policy Instruments for Science, Technology and Innovation (Evaluation of Science and Technology Policies). National Research University **-** Higher School of Economics, Moscow.

593. **Shapira, Philip**. March 29, 2011. "Trajectories of Nanotechnology Research and Innovation." Presentation. Grenoble Ecole de Management's Winter School on Emerging Nanotechnologies, Autrans, France.

594. **Shapira, Philip**. December, 2010. "Trajectories of Nanotechnology Research and Innovation." Presentation. 2010 NSF Nanoscale Science and Engineering Grantees Conference, Arlington, VA.

595. **Shapira, Philip**. October 01, 2010. "Innovation System Dynamics and the Globalization of Nanotechnology Innovation." Presentation. S.NET Conference 2010, Darmstadt, Germany.

596. **Shapira, Philip**. March, 2010. "Nanotechnology Innovation and Commercialization." Panel. Innovative and Responsible Governance to Address Grand Challenges of Human Development, Workshop on the Long-term Impacts and Future Opportunities for Nanoscale Science and Engineering (NANO2), Chicago, IL.

597. **Shapira, Philip**. June, 2009. "Anticipating Nanotechnology: Applying Real-Time Technology Assessment to Develop Strategic Insights for Nanotechnology Research and Innovation." Seminar. Centre for Self Organising Molecular Systems (SOMS), University of Leeds, UK.

598. **Shapira, Philip**. May, 2009. "From Lab to Market: Pathways of Research Commercialization in Nanotechnology Firms in China." Presentation. Colloquium on Nanotechnology Innovation and Commercialization in China, Manchester, UK.

599. **Shapira, Philip**. April, 2009. "State Models for Supporting Emerging Nanotechnology." Presentation. Workshop on Regional, State and Local Initiatives in Nanotechnology, National Nanotechnology Initiative, Oklahoma City, OK.

600. **Shapira, Philip**. March, 2009. "Anticipating Nanotechnology: Real-Time Technology Assessment of Research and Innovation Systems." Presentation. School of Management and Economics, Knowledge Management and Data Analysis Laboratory, Beijing Institute of Technology, Beijing, China.

601. **Shapira, Philip**. March, 2009. "Anticipating Nanotechnology: Real-Time Technology Assessment and the Center for Nanotechnology in Society." Presentation. Institute for Future Technology (IFTECH), Tokyo, Japan.

602. **Shapira, Philip**. March, 2009. "Emergence of Distributed Technology Assessment in the USA: From OTA to the Center for Nanotechnology in Society." Presentation. International Workshop on Innovation and Institutionalization of TA in Japan, I2TA, University of Tokyo, Tokyo, Japan.

603. **Shapira, Philip**. June 20, 2007. "Nanotechnology in Society: Research and Innovation Systems Program Assessment." Presentation. Beijing Institute of Economic Management, Chinese Academy of Science, June 19, 2007; and at Institute of Policy and Management, Chinese Academy of Sciences, Beijing, China.

604. **Shapira, Philip**. February, 2007. "Societal Assessment of Nanotechnology U.S. Experience." Presentation. Symposium on Nanotechnology by the Ministry of Research, Science and Technology at the Advanced Materials and Nanotechnology (AMN-3) 2007 Conference, Wellington, New Zealand.

605. **Shapira, Philip** and **Alan L. Porter**. March 23, 2009. "Nanotechnology: Will it Drive a New Innovation Economy for the US." Presentation. Project on Emerging Nanotechnologies, Woodrow Wilson International Center for Scholars, Washington, DC.

606. **Shapira, Philip** and **Alan L. Porter**. September, 2005. "Mapping the Nanotechnology Enterprise." Presentation. American Political Science Association Annual Meeting, Washington, DC.

607. **Shapira, Philip**, **Alan L. Porter** and **Jan Youtie**. August, 2006. "Refining Search Terms for Nanotechnology." Presentation. Presented at the National Science Foundation, Arlington, VA.

608. **Shapira, Philip**, **Alan L. Porter**, **Jan Youtie** and Li Tang. September, 2008. "Nanotechnology Questions, Methods, Metrics and Results: CNS." Presentation. Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.

609. **Shapira, Philip** and **David H. Guston**. March, 2007. "Societal Assessment of Nanotechnology US Experience." Presentation. Ministry of Research, Science and Technology, Wellington, New Zealand.

610. **Shapira, Philip** and **Jan Youtie**. January, 2013. "Research and Innovation Systems Assessment of Emerging Technologies." Co-taught Modules. CNS Winter School on Anticipatory Governance of Emerging Technology, Mesa, AZ.

611. **Shapira, Phili**p and **Jan Youtie**. December 07, 2012. "Interpreting Trajectories of Nanotechnology Research and Innovation (and, is there a "Nanotechnology Paradox?")." Presentation. Center for Nanotechnology in Society at Santa Barbara, Santa Barbara, CA.

612. **Shapira, Philip** and **Jan Youtie**. January, 2011. "RTTA 1 - Research Program Assessment." Presentation. Center for Nanotechnology in Society at ASU, Tempe, AZ.

613. **Shapira, Philip** and **Jan Youtie**. March, 2010. "Transatlantic Workshop on Nanotechnology Innovation and Policy." Presentation. Transatlantic Workshop on Nanotechnology Innovation and Policy, Atlanta, GA.

614. **Shapira, Philip** and **Jan Youtie**. May, 2008. "What's New about Emerging Metropolitan Nanodistricts in the United States and Europe? Characteristics of Research and Commercialization." Presentation. The NBER Conference on Emerging Industries: Nanotechnology and NanoIndicators, Cambridge, MA.

615. **Shapira, Philip**, **Jan Youtie** and **Alan L. Porter**. November 11, 2011. "Trajectories of Global Nanotechnology Commercialization." Presentation. IGERT Seminar, Georgia Institute of Technology, Atlanta, GA.

616. **Shapira, Philip**, **Jan Youtie** and Luciano Kay. October, 2009. "Global Developments in Nanotechnology Commercialization." Presentation. 2nd Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.

617. **Shapira, Philip**, **Jan Youtie** and Sanjay Arora. November, 2011. "Probing Early Patterns of Commercialization in Graphene." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

618. **Shapira, Philip** and Jue Wang. April, 2008. "From Lab to Market: Strategies and Issues in the Commercialization of Nanotechnology in China." Presentation. Panel on Cultures Meet Technology: New Approaches to Innovation and Economic Development in Asia and the West, Association for Asian Studies, 2008 Annual Meeting, Atlanta, GA.

619. Shih, Tsung-Jen, **Dietram A. Scheufele** and **Elizabeth A. Corley**. June, 2010. "Exploring Item Non-Response in Public Opinion Surveys about Nanotechnology: Evidence from 21 Countries." Presentation. Annual Convention of the International Communication Association, Singapore.

620. Shih, Tsung-Jen, **Dietram A. Scheufele** and **Elizabeth A. Corley**. June, 2010. "A Multilevel Model of Risk and Benefit Perception." Presentation. Annual Convention of the International Communication Association, Singapore.

621. Simis, Molly J. May 2014. "Predicting Adherence to the Defecit Model: Research I Scientists' Perceptions of How Lay Individuals Form Attitudes toward Nanotechnology." Presentation. 13th International Public Communication of Science and Technology Conference. Salvador, Brazil.

622. **Slade, Catherine**. December 04, 2009. "Public Values in Nanomedicine." Presentation. The Dupont Summit on Science and Technology Policy. "The New Administration Challenges on Science and Technology: Staying the Course in Times of Crisis." Policy Studies Organization, Carnegi, Washington, DC.

623. **Slade, Catherine**, Derrick Anderson, **Erik Fisher** and **Barry Bozeman**. August, 2009. "Public Value Mapping of Nanotechnology: A Developing Approach for Tracking Public and Social Values in

Science and Innovation Policies." Presentation. Annual Meeting of the American Sociological Association. August 7-11, 200, San Francisco, CA.

624. **Sommerfield, Milton R.**, **Mark Edwards** and **David Conz**. January 15, 2010. "Bugs for Fuels: Microbes in out Energy Future." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

625. Soumonni, Diran. February, 2012. "Assessing South Africas Nanotechnology Strategy: What Role for the Private Sector in Pro-Poor Innovation." Presentation. Workshop on Original Policy Research (WOPR) seminar in the School of Public Policy, Atlanta, GA.

626. Soumonni, Ogundiran. August, 2012. "Nanotechnology and Renewable Energy Development in China and South Africa: Bridging the Gap between Research and Innovation." Presentation. Globelics Doctoral Academy, Rio de Janeiro, Brazil.

627. Soumonni, Ogundiran and **Susan Cozzens**. September 26-28, 2013. "Innovation in Nanotechnology for Renewable Energy Applications: A Comparative Analysis of South Africa and the U.S.A." Presentation. Atlanta Conference on Science and Innovation Policy. School of Public Policy. Georgia Institute of Technology. Atlanta, GA.

628. **Stone, Anne** and **William H. Kimbel**. September 17, 2010. "Who Are You Calling Neandertal? Tracing Our Ancient Ancestors." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

629. **Strumsky, Deborah**. November 16, 2011. "How Green is Nano." Presentation. The Institute for Operations Research and the Management Sciences (INFORMS) Annual Conference, Charlotte, NC.

630. Su, Leona Yi-Fan, **Ashley A. Anderson**, **Dominique E. Brossard**, **Dietram A. Scheufele** and **Michael A. Xenos**. May, 2012. "Public Opinion and Uncertain Science: Exploring the Dynamics behind Real and Perceived Expertise Gaps in Nanotechnology." Paper Presentation. The Annual Conference of the American Association for Public Opinion Research, Orlando, FL.

631. Su, Leona Yi-Fan, **Dietram A. Scheufele**, **Dominique E. Brossard** and **Michael A. Xenos**. August, 2012. "Seeking Information about Complex Science: The Interplay of Risk-Benefit Perceptions and Prior Knowledge." Paper Presentation. The Annual Convention of the Association for Education in Journalism and Mass Communication, Chicago, IL.

632. Su, Leona Yi-Fan, **Dominque E. Brossard**, Ashley A. Anderson and **Dietram A. Scheufele**. April, 2012. "Audience Tectonics: Implications of Changing News Environments for Public Understanding of Science." Paper Presentation. The Annual Convention of the International Network on Public Communication of Science and Technology (PCST), Florence, Italy.

633. Su, Leona Yi-Fan, Heather E. Akin, **Dominique E. Brossard**, **Dietram A. Scheufele** and **Michael A. Xenos**. Under review, "Science Audience Tectonics: News Consumption Pattern and its Implication for Public Understanding." Paper Presentation. The Annual Conference of the Association for Education in Journalism and Mass Communication, Washington, DC.

634. Su, Leona Yi-Fan, Michael A. Cacciatore, **Dominique E. Brossard**, **Dietram A. Scheufele**, **Michael A. Xenos** and **Elizabeth A. Corley**. 2013. "Attitudinal Gap: How Experts and Lay Audiences Form Policy Attitudes toward Controversial Science." Presentation. Association for Public Policy Analysis & Management (APPAM). Washington, DC.

635. Su, Leona Yi-Fan, Xuan Liang, Nan Li, **Dietram A. Scheufele**, **Dominique E. Brossard** and **Michael A. Xenos**. May, 2013. "Public Sentiments Online: New Tools of Measurement Combining Human- and Computer-Based Coding." Paper Presentation. The Annual Convention of the American Association for Public Opinion, Boston, MA.

636. **Suchman, Mark C.** 2007. "The Implications of Nanotechnology for Social Science and Social Policy." Presentation. Cornell CNF Public Interest Talk Series, Ithaca, NY.

637. **Suchman, Mark C.** 2007. "Sharing is (S)caring on the Digital Frontier: The Challenges of Information Technology Governance in Health Care Organizations." Presentation. Cornell Center for the Study of Economy and Society, 2006-2007 Seminar Series on Institutions, Market Processes, and the Firm and to Brown University Department of Sociology Colloquium, Ithaca, NY.

638. **Suchman, Mark C.** 2007. "HIT or Miss? The Governance Challenges of Health Information Technology." Presentation. Cornell Law School Faculty Workshop; and to Duke Law School Faculty Workshop, Ithaca, NY.

639. **Suchman, Mark C.** 2006. "Taming the Market for Medical Information: Sharing is (S)caring on the Digital Frontier." Presentation. University of California-Irvine Critical Legalities Symposium, Irvine, CA.

640. Tang, Li. April, 2008. "Networks of Research Collaboration in China: Evidence from Nanotechnology Publication Activities, 1990-2006." Presentation. Invited Presentation at the University of Maastricht, The Netherlands, Maastricht, the Netherlands.

641. Tang, Li. February, 2008. "Nanotechnology Knowledge Networks in China." Presentation. PRIME Nanotechnology Winter School, Grenoble, France.

642. Tang, Li. October, 2007. "Networks of Research Collaboration in China: Evidence from Nanotechnology Publication Activities, 1990-2006." Presentation. Atlanta Science and Technology Policy Conference, Atlanta, GA.

643. Tang, Li. October, 2007. "New Argonauts & Scientific Networks: Evidence from Chinas Nanotech Publication." Presentation. Atlanta Science and Technology Policy Conference, Atlanta, GA.

644. Thoreau, Francois. September 08, 2009. "Integrated Research and Protected Spaces: A New Role for ST." Poster presentation. Society for the Study of Nanoscience and Emerging Technologies, Seattle, WA.

645. **Thorpe, Michael** and **Eric Ramsey**. April 20, 2007. "Could a Computer Become Sentient? Reductionism and Emergence in Science." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

646. **Thorpe, Michael** and **Manfred Laubichler**. April, 2007. "Reductionism and Emergence in Science: New versus Old Views of Nature and the Universe." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

647. **Tomblin, David**. In review. June 27, 2014. "Futurescape City Tours and Citizen-driven Deliberations: What are the Possibilities for Generative Justice?." Presentation. Workshop: Generative Justice – Values from the Bottom-up.

648. **Tomblin, David**. 2014. "The Influence of Demographic Diversity on the Outcomes of Futurescape City Tours: A Multi-site Comparison." Presentation. Dupont Summit on Science Policy 2014.

649. Valdivia, Walter. August, 2008. "Technology, Growth, and Inequality." Poster presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.

650. Valdivia, Walter. June, 2008. "Inequality and Nanotechnology." Presentation. Workshop on Inequality and Emerging Technologies, Valleta, Malta.

651. Valdivia, Walter. January, 2008. "Science Policy and Inequality." Presentation. First Indo-American Institute of Nano-scale Science and Engineering, Chennai, India.

652. Valdivia, Walter. January, 2008. "Science Policy and Inequality: A Research Program." Presentation. NISTADS, New Delhi, India.

653. Valdivia, Walter. October, 2007. "Non-Cooperative Games in Science Policy." Presentation. Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

654. Valdivia, Walter. March, 2007. "Anticipatory Governance of Emerging Technologies." Presentation. Science-Society Interface at Universite de Lausanne, Lausanne, Switzerland.

655. **Vermaas, Willem**, **Michael White** and **Barry Ritchie**. February 15, 2008. "Evolution and Faith: Room for Both." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

656. Wang, Jing, **Elizabeth A. Corley** and **Eric Welch**. 2009. "Barriers and Motivators for the Adoption of Public Sector Environmental Management Systems." Paper Presentation. Western Social Science Association.

657. Wang, Jue. February, 2008. "From Lab to Market: Strategies and Issues in the Commercialization of Nanotechnology in China." Presentation. Presentation at the National Academy of Sciences, Student Forum on Science and Technology Policy, Washington, DC.

658. Wang, Jue. September, 2007. "From Lab to Market: Strategies and Issues in the Commercialization of Nanotechnology in China." Presentation. National Academy of Science, Conference on the Dragon and the Elephant: Understand the Development of Innovation Capacity in China and India, Washington, DC.

659. Wang, Jue. September, 2006. "Resource Spillover from Academia to High Tech Industry: Evidence from Nanotech Start-up Enterprises." Presentation. 2006 Technology Transfer Society Conference, Atlanta, GA.

660. Wang, Wenping. November 05, 2011. "Analyzing the Effect of Interdisciplinary Research on Patent Evaluation: Case Studies in NBS and DSSCs." Session. Measuring Research Interdisciplinarity and Knowledge Diffusion, American Evaluation Association.

661. Wender, Benjamin A. and Dwarakanath R. Triplican. 2013. "Anticipatory LCA of PV." Presentation. Arizona Student Energy Conference (AzSEC). Tucson, AZ.

662. Wender, Benjamin A., Dwarakanath R. Triplican, **Thomas P. Seager** and **Matthew P. Fraser**. 2012. "Anticipatory LCA of Photovoltaics." Presentation. Invited Presentation for First Solar Inc. Tempe, AZ.

663. Wender, Benjamin A., Rider W. Foley and **Thomas P. Seager**. November 2013. "Towards Anticipatory Life Cycle Assessment." Presentation. 2nd Sustainable Nanotechnology Organization Conference (SNO). Santa Barbara, CA.

664. Wender, Benjamin A., Rider W. Foley, **Thomas P. Seager** and **David H. Guston**. 2013. "Anticipatory Life Cycle Assessment and Responsible Innovation." Presentation. Society for the Study of Nano and Emerging Technologies (S.NET). Boston, MA.

665. Wender, Benjamin A., Rider W. Foley, **Thomas P. Seager** and **David H. Guston**. 2012. "Anticipatory Governance and Anticipatory Life Cycle Assessment." Presentation. Poster Presentation at the Gordon Research Symposium on Science and Technology Policy. Waterville Valley, NH.

666. Wender, Benjamin A. and **Thomas P. Seager**. 2012. "Anticipatory Life Cycle Assessment." Presentation. Poster Presentation at the International Symposium on Sustainable Systems and Technology. Boston, MA.

667. Wender, Benajamin A. and **Thomas P. Seager**. 2011. "Prospective LCA of Nano-enabled Lithium ion Batteries." Presentation. Society for the Study of Nano and Emerging Technologies (S.NET). Tempe, AZ.

668. Wender, Benjamin A. and **Thomas P. Seager**. 2011. "Towards Prospective Life Cycle Assessment." Presentation. International Symposium on Sustainable Systems and Technology. Chicago, IL.

669. Wender, Benjamin A., **Thomas P. Seager**, **David H. Guston** and **Matthew P. Fraser**. 2013. "Anticipatory LCA for Emerging Nanotechnologies." Presentation. Gordon Research Conference on Nanomaterials for Energy Applications. Ventura, CA.

670. **Westerhoff, Paul** and Meredith Gartin. January 21, 2011. "A Drop to Drink: What could Wind Up in Our Water." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

671. **Wetmore, Jameson**. December 12, 2012. "Engaging the Public in Conversations about Nano and Society." Presentation. NISE Net Network Wide Meeting, Cambridge, MA.

672. **Wetmore, Jameson**. November 28, 2012. "Teaching Ethics, Policy and Societal Implications of Research to Scientists and Engineers: Outlining Content." Presentation. Materials Research Society Fall Meeting, Boston, MA.

673. **Wetmore, Jameson**. November 08, 2012. "Facilitating Conversations on the Science Museum Floor: Engaging Visitors in the Social Aspects of Science and Technology." Workshop. ESRC Genomics Policy and Research Forum, University of Edinburgh, Scotland.

674. **Wetmore, Jameson**. October 24, 2012. "STS Concepts and Educational Approaches for Engaging the Public in Nanotechnology and Society." Presentation. Annual Meeting of the Society for the Study of Nanoscience and Emerging Technologies (S.NET), University of Twente, Twente, the Netherlands.

675. **Wetmore, Jameson**. October 08, 2012. "The Need for Local Sensitivities in International Standards." International Workshop. Engineering Ethics for a Globalized World (EGW12), University of Illinois, Champaign, IL.

676. **Wetmore, Jameson**. October, 2012. "Whose Nano is it anyways? Exploring the Equity Implications of Nanotechnology through an Interactive Game." Presentation. Annual Meeting for the Society for Social Studies of Science, Copenhagen, Denmark.

677. **Wetmore, Jameson**. October, 2012. "STS Engagements with Science Centers: Bringing Broader Implications to the Museum Floor." Panel Organizer. Society for Social Studies of Science, Copenhagen, Denmark.

678. **Wetmore, Jameson**. September 25, 2012. "Social Studies of Technology and Religion." Presentation. Nano Impacts Group, University of Notre Dame, Notre Dame, IN.

679. **Wetmore, Jameson** September 24, 2012. "Facilitating Reflection on Nanotechnology and Society: Actively Engaging the Public to Think about our Collective Future." Presentation. ND Nano Seminar, University of Notre Dame, Notre Dame, IN.

680. **Wetmore, Jameson**. September 24, 2012. "Nanotechnology and Society: Actively Engaging the Public to Think about our Collective Future." Facilitating Reflection. ND Nano Seminar, University of Notre Dame, Notre Dame, IN.

681. **Wetmore, Jameson**. September 15, 2012. "World Wide Views on Biodiversity." Facilitator. Arizona State University, Tempe, AZ.

682. **Wetmore, Jameson**. August 08, 2012. "Inclusive Innovation for Inclusion Development." Discussion Leader. Gordon Research Conference on Science and Technology Policy, Waterville Valley, NH.

683. **Wetmore, Jameson**. August 05, 2012. "Ecology Governance Challenges Presented by Emerging Technologies." Moderator. Science Beyond the Field: a Policy (dis)Orientation Workshop, Portland, OR.

684. **Wetmore, Jameson**. March 09, 2012. "A Users Guide to Everyday Technology." Keynote Speech. Issue Day, Maumee Valley Country Day School, Toledo, OH.

685. **Wetmore, Jameson**. March 09, 2012. "Amish Technology." Workshop. Issue Day, Maumee Valley Country Day School, Toledo, OH.

686. **Wetmore, Jameson**. March 09, 2012. "Nano Equity Game: Whose Nano is it?" Workshop. Issue Day, Maumee Valley Country Day School, Toledo, OH.

687. **Wetmore, Jameson**. March, 2012. "Nano Equity Game: Whose Nano is it?" Presentation. Nano and Society training program, Arizona Science Center, Phoenix, AZ.

688. **Wetmore, Jameson**. January, 2012. "Nano Equity Game: Whose Nano is it?" Presentation. NISENet Program committee meeting, Oregon Museum of Science & Industry.

689. **Wetmore, Jameson**. December, 2011. "Nano Equity Game: Whose Nano is it?" Presentation. Adult Night, Arizona Science Center, Phoenix, AZ.

690. **Wetmore, Jameson**. November, 2011. "Equity, Equality, and Responsibility." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

691. **Wetmore, Jameson**. November, 2011. "Congress on Teaching the Social and Ethical Implications of Research." Conference Organizer. Joint Meeting of the NNIN SEI Coordinators, NSEC SEI Coordinators, ASUs three EESE grants, and NISENets social implications group, Tempe, AZ.

692. **Wetmore, Jameson**. November, 2011. "The Challenges of Equity, Equality, and Development." Panel Organizer. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

693. **Wetmore, Jameson**. November, 2011. "Teaching Social and Ethical Implications of Research to Scientists and Engineers." Panel Organizer. Society for Social Studies of Science, Cleveland, OH.

694. **Wetmore, Jameson**. November, 2011. "Nano Equity Game: Whose Nano is it?" Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

695. **Wetmore, Jameson**. October, 2011. "The Challenge of Path Dependency and the Need for Anticipatory Governance." Presentation. CSPO in DC: New Tools for Science Policy, Washington, DC.

696. **Wetmore, Jameson**. September 20, 2011. "New Technologies New Risks? What are the Implications of a Technologically Complex World on the Way we think about the Risks of Novel Technologies and Practices?" Panel Presentation. Symposium on Risk Uncertainty and Sustainable Innovation, University of Michigan, Ann Arbor, MI.

697. **Wetmore, Jameson**. July 18, 2011. "Swimming Upstream: When Scientists and Engineers are More Concerned about Science & Technology than the Public." Presentation. Upstream Engagement with Science and Technology: Opportunities and Challenges, a mini-symposium, ESRC Genomics Network, University of Edinburgh, Scotland.

698. **Wetmore, Jameson**. March 14, 2011. "The Challenges of Path Dependence and the Need for Anticipatory Governance." Presentation. CNS-ASU Resilience 2011 Workshop at ASU, Tempe, AZ.

699. **Wetmore, Jameson**. April 03, 2010. "Nanodays-Student Presentations of Basic Science and Nanotechnology Applications." Arizona Science Center, Phoenix, AZ.

700. **Wetmore, Jameson**. March 25, 2010. "Opportunities for Engaging with the Public." Asilomar International Conference on Climate Intervention Technologies, Pacific Grove, CA.

701. **Wetmore, Jameson**. March, 2010. "Nanodays-Student Presentations of Basic Science and Nanotechnology Applications." Tempe Festival of the Arts. March 26-28, 2010, Tempe, AZ.

702. **Wetmore, Jameson**. February 22, 2010. "Lessons of Engagement: Learning from Policymakers and the Public." Presentation. Annual Meeting of the American Association for the Advancement of Science.

703. **Wetmore, Jameson**. December 09, 2009. ""Overview of CNS-ASU" with David H. Guston." Presentation. 2009 NSF Nanoscale Science and Engineering Grantees Conference, Arlington, VA.

704. **Wetmore, Jameson**. December 09, 2009. "Best Practices of NSEC's and MRSEC's for Advancing NSE Education-Diversity Aspects." Presentation. 2009 NSF Nanoscale Science and Engineering Grantees Conference, Arlington, VA.

705. **Wetmore, Jameson**. November 08, 2009. "Technology and the City." Presentation. On the Cutting Edge...Today's Jewish Women Symposium, Scottsdale, AZ.

706. **Wetmore, Jameson**. October 30, 2009. "Begging for Regulation: The Quest to Tame Nanotechnology." Presentation. Annual Meeting of the Society for Social Studies of Science, Washington, DC.

707. **Wetmore, Jameson**. July 22, 2009. "Anticipatory Governance of Emerging Technologies." Presentation. National Institute for Nano-Engineering Summer Student Program, Sandia National Labs. Invited.

708. **Wetmore, Jameson**. July 08, 2009. "Nanotechnology and Society." Presentation with Troy Benn. Arizona Science Center's Junior Science Correspondents Program, Phoenix, AZ.

709. **Wetmore, Jameson**. June 16, 2009. "What Should Everyone Know about Technology?" Panel discussion. American Society for Engineering Education Annual Conference, Austin, TX.

710. **Wetmore, Jameson**. June 15, 2009. "Integrating Microethics and Macroethics in Graduate Science and Engineering Education: Developing Instructional Models." Presentation with Joe Herkert. American Society for Engineering Education Annual Conference, Austin, TX.

711. **Wetmore, Jameson**. March, 2009. "Innovation and Graduate Education." Presentation. Presented at Centers, Universities, and the Scient, Arlington, VA.

712. **Wetmore, Jameson**. December, 2008. "Amish Sociologists: Building Society with Technology." Presentation. National Nanotechnology Infrastructure Network, Indian Institute of Technology, Kanpur Winter School on Organic Electronics, Kanpur, India.

713. **Wetmore, Jameson**. November, 2008. "Nanotechnology the Promise, Politics, and Personal Impacts." Presentation. Presentation to the Women's Symposium, co-sponsored by the Jewish Studies Department at Arizona State University and the Bureau of Jewish Education of Greater Phoenix, Phoenix, AZ.

714. **Wetmore, Jameson**. August, 2008. "A Dialogue on Nanotechnology and Religion: Using Religious Expertise to Build Nanotechnology." Poster Presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.

715. **Wetmore, Jameson**. June, 2008. "The Challenge of Path Dependence." Presentation. IEEE Symposium on Technology & Society, Fredericton, New Brunswick, Canada.

716. **Wetmore, Jameson**. April, 2008. "What Do You Think About a Technology You Can’t Even Se." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

717. **Wetmore, Jameson**. December, 2007. "Amish Technology." Presentation. Spirit of the Senses Salon, Phoenix, AZ.

718. **Wetmore, Jameson**. November, 2007. "ASB 591: Seminar on Professionalism, on the Academic job search." Presentation. Seminar on Professionalism.

719. **Wetmore, Jameson**. October, 2007. "Building a Better Air Bag: the Continuing Search for a Technical Fix." Presentation. Mobility History, Heritage and Design Fifth Annual Conference on History of Transport, Traffic and Mobility (T2M), Helmond, the Netherlands.

720. **Wetmore, Jameson**. September, 2007. "Bureaucrats, Lobbyists, and Regulators, Oh My! Introducing Graduate Students to Science Outside the Lab." Presentation. CSPOs Enlightening Lunch, with Ira Bennett, Arizona State University, Tempe, AZ.

721. **Wetmore, Jameson**. August, 2007. "Cats Cradle, by Kurt Vonnegut." Presentation. Spirit of the Senses Salon, Scottsdale, AZ.

722. **Wetmore, Jameson**. June, 2007. "Teaching the Ethics and Social Implications of Emerging Technologies to Graduate Level Students." Presentation. American Society for Engineering Education Annual Conference, Honolulu, HI.

723. **Wetmore, Jameson**. March, 2007. "Transferring Western Technology to Developing Countries: Good Intentions, Unexpected Outcomes." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

724. **Wetmore, Jameson**. March, 2007. "STS in the Trenches: Engaging Scientists and Engineers." Presentation. STS Engaged Workshop, University of Virginia Department of Science, Technology and Society, Charlottesville, VA.

725. **Wetmore, Jameson**. February, 2007. "Nanotech and Religion: Ambitions, Influence, and Policy." Presentation. CNS-UCSB, Santa Barbara, CA.

726. Wetmore, Jameson. August, 2006. "Religious Forays into Nanotechnology Policy." Presentation. Gordon Research Conference on Science and Technology Policy, Big Sky, MT.

727. **Wetmore, Jameson** and **Andrea Lewis**. January 20, 2012. "What's in our Skincare?" Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

728. **Wetmore, Jameson** and **Ira Bennett**. August 14, 2013. "Social and Ethical Implications of Nanotechnology." Presentation. NNIN REU Convocation. Atlanta, GA.

729. **Wetmore, Jameson** and **Ira Bennett**. July 10, 2013. "Education and Training Panel." Presentation. Sixth International Meeting on Synthetic Biology (SB 6.0), Imperial College. London.

730. **Wetmore, Jameson** and **Ira Bennett**. July 4, 2013. "Nano around the World." Presentation. 1st Common Summer school of ERASynBio and ST-Flow: Synthetic Biology in Action. Madrid, Spain.

731. **Wetmore, Jameson** and **Ira Bennett**. January, 2012. "SEI Professional Development Plans." Presentation. Societal and Ethical Implications Meeting, Nanoscale Informal Science Education Network, Oregon Museum of Science and Industry, Portland, OR.

732. **Wetmore, Jameson**, **Shobita Parthsarathy** and Regula Valerie Burri. October 30, 2009. "The New Sentinels of Progress? Investigating Emerging Approaches to Governing Technology." Panel Organizer. Series of three panels, Society for Social Studies of Science Annual Meeting, Washington, DC.

733. **White, Dave** and Troy M. Benn. May 15, 2009. "To Drink or Not to Drink: What Should We Do to Have Good-Tasting, Safe and Sustainable Water into the Future." Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

734. **Wiek, Arnim**. November, 2011. "STIR and the City: Integration Research and Sustainability Science." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

735. **Wiek, Arnim**. March 14, 2011. "Resilience, Sustainability, and Anticipatory Governance - Pieces of the Puzzle." Presentation. Resilience 2011, Arizona State University, Tempe, AZ.

736. **Wiek, Arnim** and **Cynthia Selin**. 2009. "The Future of Phoenix - Crafting Sustainable Development Strategies for Phoenix." Presentation. School of Sustainability. Arizona State University.

737. **Wiek, Arnim** and Rider W. Foley. March 16, 2012. "Will Science and Technology put the Able into Sustainable?" Talk. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

738. **Wiek, Arnim** and Rider W. Foley. December 19, 2011. "The Dragon beneath Phoenix: Meaningful Community Involvement, Effective Remediation, and Sustainable Urban Development at the M52 Superfund Site in Phoenix." Presentation. Jiangsu Senior Executive Public Administration Training Program. Arizona State University, Phoenix, AZ.

739. **Wiek, Arnim** and Rider W. Foley. November, 2011. "Nanotechnology for Sustainability? Analyzing the Demand for and Supply of Nanotechnology in City Environments." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

740. **Wiek, Arnim**, Rider W. Foley and **David H. Guston**. November 2013. "Broken Promises and Breaking Ground – Anticipatory Governance Research against Business-as-Usual in Nanotechnology Innovation." Presentation. 2nd Sustainable Nanotechnology Organization Conference (SNO). Santa Barbara, CA.

741. **Wolbring, Gregor**. August, 2006. "Governance of Nano-bio-info-cogno-synbio." Presentation. NABIS Conference, Chicago, IL.

742. **Wolbring, Gregor**. December, 2005. "The Triangle of Enhancement Medicine, Disabled People, and the Concept of Health: A New Challenge for HTA, Health Research, and Health Policy. Health Technology Assessment (HTA) Initiative #23." Presentation. Alberta Heritage Foundation for Medical Research,, Edmonton, Alberta, Canada.

743. **Woodbury, Neal**. April, 2006. "Evolution on a Chip: Making Molecules Work for U." Presentation. CNS-ASU Science Cafe, Arizona Science Center, Phoenix, AZ.

744. **Woodbury, Neal** and **David H. Guston**. November 02, 2010. "Life Saver or Privacy Invasion? Identifying Disease before Symptoms." Presentation. Spirit of the Senses, Tempe, AZ.

745. Woodson, Thomas. November 6-9, 2013. "Inequality in Nanomedicine." Presentation. Association for Public Policy Analysis and Management.

746. Woodson, Thomas. September 26-28, 2013. "Inequality in Nanomedicine." Presentation. Atlanta Conference on Science and Innovation Policy. School of Public Policy. Georgia Institute of Technology. Atlanta, GA.

747. Woodson, Thomas. June 3-5, 2013. "Inequality in Nanomedicine." Presentation. Universidade Federal do Paraná.

748. Woodson, Thomas. May 17-31, 2013. "Inequality in Nanomedicine." Presentation. Globelics Academy.

749. Woodson, Thomas. March, 2013. "Research Inequality in Nanomedicine." Poster Presentation. Georgia Tech Graduate Student Conference, Atlanta, GA.

750. Woodson, Thomas. August, 2012. "Research Inequality in Nanomedicine." Poster Presentation. Gordon Research Conference: Science and Technology Policy, Waterville Valley Resort, Watervillle Valley, NH.

751. Woodson, Thomas. November, 2011. "Nanotechnology in India: An examination of the Productivity and Equitable Nature of their Research Program." Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

752. Woodson, Thomas. September, 2011. "The 10/90 Gap in Health Related Nanotechnology Research." Presentation. The Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

753. Woodson, Thomas and **Susan Cozzens**. May, 2011. "New Technologies, New Power Relationships?: The Case of Nanomedicine." Presentation. Conference on the Political Sociology of Science and Technology, Troy, NY.

754. Woodson, Thomas, Susan Cozzens, Jameson M. Wetmore, Matthew Harsh, Ogundiran Soumonni and Rodrigo Cortes Lobos. October, 2012. "Assessing Equity and Equality in South Africa's Nanotechnology Intiative." Presentation. Society for the Social Studies of Science, Copenhagen.

755. **Xenos, Michael A.**, **Dietram A. Scheufele**, **Dominique E. Brossard**, Doo-Hun Choi, Michael A. Cacciatore, Sara K. Yeo and Leona Yi-Fan Su. June 2013. "News Media Use and the Informed Public in the Digital Age." Presentation. Annual Convention of the International Communication Association. Lodon, United Kingdom.

756. **Xenos, Michael A.**, **Dietram A. Scheufele**, **Dominique E. Brossard**, Doo-Hun Choi and Michael A. Cacciatore. August, 2012. "News Media Use and the Informed Public in the Digital Age." Paper Presentation. The American Political Science Association (APSA) Political Communication Pre-Conference, Baton Rouge, LA.

757. Xenos, Michael A., **Dietram A. Scheufele**, **Dominique E. Brossard**, Doo-Hun Choi, Michael A. Cacciatore, Sarah K. Yeo, et al. Forthcoming, June, 2013. "News Media use and the Informed Public in the Digital Age." Paper Accepted for Presentation. Annual Convention of the International Communication Association, London, England.

758. Yeo, Sara K., Ashley A. Anderson, Nan Li, Kristin K. Runge, **Dominique E. Brossard**, **Dietram A. Scheufele**, et al. November, 2012. "Exploring the Interplay of Values and Use of Information Channels on Public Opinion of Nuclear Energy." Paper Presentation. The 2012 Behavior, Energy, and Climate Change (BECC) Conference, Sacramento, CA.

759. Yeo, Sara K., **Dominique E. Brossard**, **Dietram A. Scheufele** and **Michael A. Xenos**. May, 2013. "Dangerous Disconnects? How Public Discourse about Nanotechnology is Missing the Point." Paper Presentation. The Annual Convention of the American Association for Public Opinion Research, Boston, MA.

760. Yeo, Sara K., **Dominique E. Brossard**, **Dietram A. Scheufele** and **Michael A. Xenos**. November, 2012. "Is the Online Environment Changing the Construction of Scientific Controversies?" Paper Presentation. The Annual Convention of the Midwest Association for Public Opinion Research, Chicago, IL.

761. Yeo, Sara K., Kristin K. Runge, Nan Li, **Dominique E. Brossard**, **Dietram A. Scheufele** and **Michael A. Xenos**. May, 2012. "The Opinion Dynamics Surrounding Nuclear Energy in the U.S.: Exploring the Interplay of Risk Perceptions, Values, Mass Media Use and Knowledge on Public Support for Nuclear Energy." Paper Presentation. The Annual Conference of the American Association for Public Opinion Research, Orlando, FL.

762. Yeo, Sara K., **Michael A. Cacciatore**, **Dominique E. Brossard, Dietram A. Scheufele** and **Michael A. Xenos**. May 2014. "Twitter as the Social Media of Choice for Sharing Science." Presentation. 13th International Public Communication of Science and Technology Conference. Salvador, Brazil.

763. Yeo, Sara K., **Michael A. Xenos**, **Dominique E. Brossard** and **Dietram A. Scheufele**. May 2014. "Contextual Cues, Selective Exposure, and Information Utility." Presentation. Annual Convention of the International Communication Association (ICA). Seattle, WA.

764. Yeo, Sara K., **Michael A. Xenos**, **Dominique E. Brossard** and **Dietram A. Scheufele**. Under review, "Information Seeking in an Age of (Un)Reliable Information." Paper Presentation. The Annual Pre-Conference of the American Political Science Association, Chicago, IL.

765. **Youtie, Jan**. November 05, 2011. "Societal Dimensions of the Nano Science and Technology Center Program." Session. Evaluation of a Nano Science and Technology Centers Program: Mixed Methods Approach to Assessing its Realization of Policy Objectives, American Evaluation Association.

766. **Youtie, Jan**. December 03, 2010. "Anticipating Developments in Nanotechnology Commercialization: The Potential Economic Impacts of Nanoelectronics." Presentation. Federal Reserve Bank of Dallas and the Semiconductor Industry, Austin, TX.

767. **Youtie, Jan**. October 26, 2010. "Silos or Systems in Emerging Science Domains." Presentation. Nano@Tech, Atlanta, GA.

768. **Youtie, Jan**. October 23, 2010. "Silos or Systems in Emerging Science Domains." Presentation. National Organization of Black Chemists and Chemical Engineers, Atlanta, GA.

769. **Youtie, Jan**. October 02, 2010. "Silos or Systems in Emerging Science Domains." Keynote. S.NET Conference 2010, Darmstadt, Germany.

770. **Youtie, Jan**. December, 2009. "Anticipating Developments in Nanotechnology Commercialization." Presentation. 2009 NSF Nanoscale Science and Engineering Grantees Conference December 7-9, 2009, Arlington, VA.

771. **Youtie, Jan**. August, 2009. "Understanding and Stimulating Highly Creative Research: Measurement and Analysis - U.S. and Europe." Special Session. Developing a Social Science of Science and Innovation Policy, American Sociological Association Annual Meeting, San Francisco, CA.

772. **Youtie, Jan**. August, 2009. "Center for Nanotechnology in Society." Presentation. Georgia Tech President, Dr. G.P. (Bud) Peterson, Atlanta, GA.

773. **Youtie, Jan**. January, 2009. "Center for Nanotechnology in Society." Presentation. Biotechnology and Public Forum, Georgia Tech, Atlanta, GA.

774. **Youtie, Jan**. November, 2007. "Nanotechnology Workshop: Definitions, Directions, Debate." Presentation. National Organization for the Professional Advancement of Black Chemists and Chemical Engineers, Atlanta, GA.

775. **Youtie, Jan**. October, 2007. "Nanodistricts in the United States: Metropolitan Trajectories and Clustering." Presentation. Atlanta Conference on Science, Technology, and Innovation Policy, Atlanta, GA.

776. **Youtie, Jan**. October, 2006. "Nano Research Enterprise Assessment." Presentation. Workshop on Next Generation Metrics, SRI, Arlington, VA.

777. **Youtie, Jan**. September, 2006. "Searching for Nanotechnology: Explorations in Research and Innovation Systems." Presentation. Technology Transfer Society Annual Meeting, Atlanta, GA.

778. **Youtie, Jan** and **Alan L. Porter**. November, 2011. "Using Large-scale Datasets to Understand the Trajectories." Roundtable Organizers. Society for the study of Nanoscience and Emerging Technologies 2011 Conference, Tempe, AZ.

779. **Youtie, Jan** and **Alan L. Porter**. October, 2009. "Conducting Research on Emerging Innovation Systems through Bibliometric Analysis." Presentation. S.NET Conference 2009, Pre-conference CNS-ASU Workshop, Seattle, WA.

780. **Youtie, Jan** and **Alan L. Porter**. October, 2009. "Datamining Researcher Recognition of Nanotechnology Risk." Presentation. 2nd Manchester International Workshop on Nanotechnology, Society and Policy, Manchester, UK.

781. **Youtie, Jan**, **Alan L. Porter**, Kevin Boyack and **Jose Lobo**. November, 2011. "Using Large-Scale Datasets to Understand the Trajectories of Emerging Technologies." Roundtable Presentation. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

782. **Youtie, Jan** and Luciano Kay. October, 2012. "Acquiring Nanotechnology Capabilities: Role of Mergers and Acquisitions in the Nanotechnology Ecosystem." Presentation. Society for the Study of Nanoscience and Emerging Technologies (S.NET), the Netherlands.

783. **Youtie, Jan**, **Maurizio Iacopetta** and **Stuart Graham**. September, 2006. "Long Views of Nanotechnology: Is it a General Purpose Technolog." Presentation. Technology Transfer Society Annual Conference, Atlanta, GA.

784. **Youtie, Jan** and **Philip Shapira**. February 19, 2013. "Time to Reassess the Promise of Nanotechnology? An Analysis of Research, Developments and Commercialization." Presentation. New Tools for Science Policy, Washington, DC.

785. **Youtie, Jan** and **Philip Shapira**. September 13, 2012. "Emerging Nanotechnologies: Scaling and Scoping Environmental, Health, and Safety Applications." Presentation. Seminar, Center for the Environmental Implications of NanoTechnology, Duke University.

786. **Youtie, Jan**, **Philip Shapira** and **Juan D. Rogers**. October, 2009. "Blind Matching Versus Matchmaking: Comparison Group Selection for Highly Creative Researchers." Presentation. 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

787. **Youtie, Jan**, **Philip Shapira**, **Juan D. Rogers** and **Thomas Heinze**. September, 2012. "Highly Creative Researchers Careers in Context." Presentation. SciSIP Principal Investigators Conference, The National Academy of Sciences, Wasington, DC.

788. **Youtie, Jan**, **Philip Shapira** and Luciano Kay. December 07, 2011. "Global Innovation in Nanotechnology: Visualization and Modeling." Presentation. NSF Nanoscale Science and Engineering Grantees Conference, Washington, DC.

789. **Youtie, Jan**, **Philip Shapira** and Luciano Kay. November, 2011. "U.S. Nanotechnology Firms from Discovery to Commercialization." Panel Presentation. Nanotechnology, Innovation, and Commercialization: Learning about a Technology Cycle through Patent Data, Patent Statistics for Decision Makers 2011.

790. **Youtie, Jan**, **Philip Shapira** and Luciano Kay. September, 2011. "Nanotechnology Firms from Discovery to Commercialization." Presentation. Technology Transfer Society Conference, Augsburg, Germany.

791. **Youtie, Jan**, **Philip Shapira** and Luciano Kay. July, 2011. "Anticipating Developments in Nanotechnology Commercialization." Presentation. Workshop on Nanotechnologies: Economic and Societal Perspectives, Karlsruhe, Germany.

792. **Youtie, Jan**, **Philip Shapira**, Sanjay Arora, Ying Guo, Lu Huang, **Douglas K. R. Robinson**, et al. November, 2011. "Anticipating Future Commercial Applications of Nanotechnology." Session. Third Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies, Tempe, AZ.

793. **Youtie, Jan**, **Philip Shapira**, **Thomas Heinze** and **Juan D. Rogers**. October, 2009. "Highly Creative Research: How it is defined and Organized." Presentation. 2009 Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

794. **Youtie, Jan**, Stephen Carley, **Philip Shapira**, **Elizabeth A. Corley** and **Dietram A. Scheufele**. September, 2011. "Perceptions and Actions: Examining the Relationship between Views on Risk and Citation Actions of Nanotechnology Scientists." Presentation. Atlanta Conference on Science and Innovation Policy, Atlanta, GA.

Other

1. ‡**Allenby, Braden**. 2010. "Emerging Technologies." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 185-189. Thousand Oaks, CA: Sage Publications.

2. ‡**Allenby, Braden**. 2010. "Enabling Technology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 189-191. Thousand Oaks, CA: Sage Publications.

3. ‡**Allenby, Braden**. 2010. "Life Cycle Analysis and Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 399-401. Thousand Oaks, CA: Sage Publications.

4. ‡**Barandiaran, Javiera**. 2010. "Berkeley, CA, Local Regulatory Efforts." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 45-47. Thousand Oaks, CA: Sage Publications.

5. ‡**Barandiaran, Javiera**. 2010. "California." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 63-65. Thousand Oaks, CA: Sage Publications.

6. ‡**Barben, Daniel**. 2010. "Acceptance Politics." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 4-5. Thousand Oaks, CA: Sage Publications.

7. ‡**Barben, Daniel**. 2010. "Anticipatory Governance." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 17-18. Thousand Oaks, CA: Sage Publications.

8. ‡**Barben, Daniel**. 2010. "Glossary." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 803-811. Thousand Oaks, CA: Sage Publications.

9. ‡**Barben, Daniel**. 2010. "Innovation." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 335-337. Thousand Oaks, CA: Sage Publications.

10. ‡**Barben, Daniel**. 2010. "Reflexive Governance." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 654-655. Thousand Oaks, CA: Sage Publications.

11. ‡**Barben, Daniel**. 22010. "Social Science." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 724-726. Thousand Oaks, CA: Sage Publications.

12. ‡Benn, Troy. 2010. "Nano-Silver." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 533-534. Thousand Oaks, CA: Sage Publications.

13. **Bennett, Ira**. 2012. "Course Overview: Energy and Energy Policy (CHM 501)."

14. **Bennett, Ira**. 2011. "DC schedule 2011."

15. **Bennett, Ira**. 2011. "Syllabus: Nanoscience and Society."

16. **Bennett, Ira**. 2011. "Syllabus: Responsible Innovation and Research (HSD 540)."

17. **Bennett, Ira**. 2011. "Syllabus: Social Implications of Research (Center for Nanotechnology in Society Short Course)."

18. **Bennett, Ira**. 2011. "Syllabus: The Social, Political, and Scientific Challenges of New Technologies: Nanotechnology." Syllabus for learning community on the social, political, and scientific challenges of new technologies, focusing on nanotechnology.

19. ‡Calleja-Lopez, Antonio. 2010. "Reflexive Modulation." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 655-656. Thousand Oaks, CA: Sage Publications.

20. ‡Conley, Shannon. 2010. "Cambridge, MA, Local Regulatory Efforts." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 65-67. Thousand Oaks, CA: Sage Publications.

21. ‡**Corley, Elizabeth A.** 2010. "Scientists' Attitudes Toward Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 704-706. Thousand Oaks, CA: Sage Publications.

22. ‡**Cozzens, Susan.** 2010. "Equity." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 214-215. Thousand Oaks, CA: Sage Publications.

23. ‡Dalrymple, Kajsa E. and **Dietram A. Scheufele**. 2010. "Public Understanding of Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 641-642. Thousand Oaks, CA: Sage Publications.

24. ‡Davies, Sarah R. 2010. "Democs." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 145-146. Thousand Oaks, CA: Sage Publications.

25. ‡Davies, Sarah R. 2010. "Nanoscale Informal Science Education Network." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 520-522. Thousand Oaks, CA: Sage Publications.

26. Domareski, J. Spring 2011. "Responsible Innovation Network." *Genomics and Society: Social Science and Humanities Research in Genomics (Newsletter of Genome BC)*, 4:13.

27. **Fiedeler, Ulrich**, **Christopher Coenen**, **Sarah R. Davies** and **Arianna Ferrari**. 2010. *Understanding Nanoscience and Emerging Technologies*. Heidelberg: Akademische Verlagsgesellschaft.

28. ‡**Fisher, Erik**, et al. 2010. *Correspondence: Research Thrives on Integration of Natural and Social Sciences*. Nature. 463(7284): 1018.

29. ‡**Fisher, Erik**. 2010. "21st Century Nanotechnology Research and Development Act." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 771-773. Thosuand Oaks, CA: Sage Publications.

30. ‡**Fisher, Erik**. 2010. "Integration." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 343-344. Thousand Oaks, CA: Sage Publications.

31. ‡**Hamlett, Patrick**. 2010. "National Citizens Technology Forum." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 215. Thousand Oaks, CA: Sage Publications.

32. ‡**Harsh, Matthew**. 2013. "South African Nanotechnology Public Engagement Program: NanoNews Writing Workshop for Postgraduate Students." Cape Town, South Africa.

33. ‡Harsh, Matthew. 2010. "International Development." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 353-356. Thousand Oaks, CA: Sage Publications.

34. ‡Harsh, Matthew. 2010. "United Nations Millenium Development Goals." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 780-782. Thousand Oaks, CA: Sage Publications.

35. ‡Hays, Sean. 2010. "Ethical Issues of Brain-Machine Interface." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 56-59. Thousand Oaks, CA: Sage Publications.

36. ‡Hays, Sean. 2010. "Foresight Institute." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 249-253. Thousand Oaks, CA: Sage Publications.

37. ‡Hays, Sean. 2010. "Human Enhancement." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 317-318. Thousand Oaks, CA: Sage Publications.

38. ‡Hays, Sean. 2010. "Transhumanism." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 769-770. Thousand Oaks, CA: Sage Publications.

39. ‡**Ho, Shirley**. 2010. "Media Representations of Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 412-413. Thousand Oaks, CA: Sage Publications.

40. ‡**Ho, Shirley**. 2010. "Risk Communication." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 674-676. Thousand Oaks, CA: Sage Publications.

41. ‡**Ho, Shirley**. 2010. "Singapore." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 714-716. Thousand Oaks, CA: Sage Publications.

42. ‡**Ho, Shirley**. 2010. "The Nanotech Chronicles." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 537-538. Thousand Oaks, CA: Sage Publications.

43. **Hogle, Linda F.** 2007. "Sentinel Beings: The Biopolitics of Human Biosensors." *Invited paper submitted to BioSocieties, theme issue on Biopower, Biotechnology and Globalization.*

44. ‡**Kleinman, Daniel Lee**. 2010. "Consensus Conference on Nanotechnology (2005)." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 116-117. Thousand Oaks, CA: Sage Publications.

45. ‡**Marchant, Gary**. 2010. "Law." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 394-398. Thousand Oaks, CA: Sage Publications.

46. ‡Milford, Richard and **Jameson Wetmore**. 2010. "American Scientific Affiliation." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 11-13. Thousand Oaks, CA: Sage Publications.

47. ‡Milford, Richard and **Jameson Wetmore**. 2010. "Journal of Lutheran Ethics." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 376-377. Thousand Oaks, CA: Sage Publications.

48. **Mitcham, Carl** and **Erik Fisher**. 2012. "Ethics and Policy." *Encyclopedia of Applied Ethics*, ed(s). Ruth Chadwick, 2nd ed. p. 165-172. San Diego, CA: Academic Press.

49. ‡**Philbrick, Mark**. 2010. "Environmental Protection Agency." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 207-209. Thousand Oaks, CA: Sage Publications.

50. ‡**Philbrick, Mark**. 2010. "Nanoscale Materials Stewardship Program." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 522-523. Thousand Oaks, CA: Sage Publications.

51. ‡**Philbrick, Mark**. 2010. "Office of Science and Technology Policy." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 612-613. Thousand Oaks, CA: Sage Publications.

52. ‡**Philbrick, Mark**. 2010. "Risk-Benefit Perceptions of Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 673-674. Thousand Oaks, CA: Sage Publications.

53. ‡**Philbrick, Mark**. 2010. "Toxic Substances Control Act and Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 764-765. Thousand Oaks, CA: Sage Publications.

54. ‡**Porter, Alan L.** 2010. "Bibliometrics." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 47-48. Thousand Oaks, CA: Sage Publications.

55. ‡**Porter, Alan L.** and **Ismael Rafols**. 2010. "Nano Research Patterns." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, Thousand Oaks, CA: Sage Publications.

56. **Queraltá, Ramón**. March 11, 2009. "[Note on first STIR project workshop]." *Boletín Interno de Noticias de la Universidad de Sevilla (BINUS).*

57. **Randles, Sally**, **Jan Youtie**, **David H. Guston**, **Barbara Harthorn**, **Chris Newfield**, et al. 2012. "A Trans-Atlantic Conversation on Responsible Innovation and Responsible Governance." *Society for the Study of Nanocience and Emerging Technologies (S.NET) Proceedings.*

58. ‡Reifschneider, Kiera. April 11, 2012. "'Speed Date a Scientist' Event Recap."

59. ‡**Rogers, Juan D.** 2010. "Research and Innovation Assessment." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 668-669. Thousand Oaks, CA: Sage Publications.

60. Schuurbiers, Daan. November 3, 2010. "Maatschappelijke verantwoordelijkheid." *Delta*, 42(31).

61. Schuurbiers, Daan. 2010. "Midstream Modulation." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 425-426. Thousand Oaks, CA: Sage Publications.

62. ‡Schuurbiers, Daan. 2009. *In Amerika. A Tryptic on Daily Life at ASU for TU Delta*. Published in the weekly magazine of Delft University of Technology.

63. Schuurbiers, Daan. 2008. "Ethics in Action." Winning essay of the Mekelprize 2008 for PhD students, Platform for Ethics.

64. ‡**Selin, Cynthia**. 2010. "Anticipation." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 13-16. Thousand Oaks, CA: Sage Publications.

65. ‡**Selin, Cynthia**. 2010. "Foresight." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 249-253. Thousand Oaks, CA: Sage Publications.

66. ‡**Shapira, Philip**. 2010. "Active Nanotechnology." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 7-8. Thousand Oaks, CA: Sage Publications.

67. ‡**Shapira, Philip** and **Jan Youtie**. 2010. "United States." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 782-788. Thousand Oaks, CA: Sage Publications.

68. ‡**Shapira, Philip**, **Jan Youtie** and Stephen Carley. 2010. "Nanodistricts." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 464-465. Thousand Oaks, CA: Sage Publications.

69. ‡**Slade, Catherine**. 2010. "Public Value Mapping." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 642-644. Thousand Oaks, CA: Sage Publications.

70. ‡Tang, Li and **Alan L. Porter**. 2010. "Data Mining." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 137-138. Thousand Oaks, CA: Sage Publications.

71. ‡Tang, Li, **Philip Shapira** and Ju Wang. 2010. "China." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 86-90. Thousand Oaks, CA: Sage Publications.

72. Thoreau, Francois. 2011. "On Reflection and Reflexivity: Unpacking Research Despositifs." *Society for the Study of Nanoscience and Emerging Technologies (S.NET) Proceedings*

73. Triplican, Dwarakanath R., Benjamin A. Wender, **Thomas P. Seager** and **Matthew P. Fraser**. 2013. "Towards Anticipatory Life Cycle Assessment of Photovoltaics." *Proceedings of the IEEE Photovoltaics Specialist Conference*, Tampa, FL.

74. Wender, Benjamin A. and **Thomas P. Seager**. 2011. "Towards prospective life cycle assessment: Single Wall Carbon Nanotubes for Lithium-ion Batteries." *Proceedings of the IEEE International Symposium on Sustainable Systems and Technology*, Chicago, IL.

75. **Wetmore, Jameson**. 2011. "View from the Street: A World of Traffic Jams." *Newsletter of the International Association for the History of Transport, Traffic, and Mobility*, 8(2):17-19.

76. ‡**Wetmore, Jameson**. 2010. "Benny the Bear." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 45-47. Thousand Oaks, CA: Sage Publications.

77. ‡**Wetmore, Jameson**. 2010. "Religion." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 665-667. Thousand Oaks, CA: Sage Publications.

78. ‡**Wetmore, Jameson**. 2010. "Society, Religion and Technology Project, Church of Scotland." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 729. Thousand Oaks, CA: Sage Publications.

79. **‡Wetmore, Jameson.** 2010. "Series of Five Posters on the Social Implications of Nanotechnology (with other Collaborators)." Distributed by the Nanoscale Informal Science Education Network to Museums Across the Country for Nanodays and Other Programs.

80. **‡Wetmore, Jameson.** 2010. "Series of Five Informational Sheets on the Social Implications of Nanotechnology (with other Collaborators)." Distributed by the Nanoscale Informal Science Education Network to Museums Across the Country for Nanodays and Other Programs.

81. **Wetmore, Jameson W.**, **Ira Bennett**, Ali Jackson and Brad Herring. 2014. "Nano and Society Guide." Handbook for museum professionals to be distributed to over 300 museums in the 2014 NISE Net Nanodays.

82. ‡**Wolbring, Gregor**. 2010. "Abel-Ism." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 2-3. Thousand Oaks, CA: Sage Publications.

83. ‡**Wolbring, Gregor**. 2010. "Cancer Treatment, Nanoenabled." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 72-74. Thousand Oaks, CA: Sage Publications.

84. ‡**Wolbring, Gregor**. 2010. "Design and Construction." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 157-160. Thousand Oaks, CA: Sage Publications.

85. ‡**Wolbring, Gregor**. 2010. "Disability and Nanoscience." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 165-166. Thousand Oaks, CA: Sage Publications.

86. ‡**Wolbring, Gregor**. 2010. "International Risk Governance Council." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 358-360. Thousand Oaks, CA: Sage Publications.

87. ‡**Wolbring, Gregor**. 2010. "Nano Hazard Symbol Contest." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 486-487. Thousand Oaks, CA: Sage Publications.

88. ‡**Wolbring, Gregor**. 2010. "Nanoparticle Occupational Safety and Health Consortium." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 514. Thousand Oaks, CA: Sage Publications.

89. ‡**Wolbring, Gregor**. 2010. "Nanophotovoltaics." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 516-518. Thousand Oaks, CA: Sage Publications.

90. ‡**Wolbring, Gregor**. "Zinc Oxide." *Encyclopedia of Nanoscience and Society*, ed(s). David H. Guston, p. 801-802. Thousand Oaks, CA: Sage Publications

91. **Youtie, Jan**, **Alan L. Porter**, **Kevin Boyack**, **Jose Lobo**, **Richard Klavan**, **Ismael Rafols**, et al. 2012. "Using Large-scale Databases to Understand the Trajectories of Emerging Technologies.” *Society for the Study of Nanoscience and Emerging Technologies (S.NET) Proceedings*.

92. ‡Zhuang, Wei. 2008. "The Impact of State R&D Investment on Nanotechnology: A Review of Nanotechnology Initiatives at the State Level." *Master of Science in Public Policy (MSPP) Professional Research Paper*, Atlanta, GA.

Search and Mapping Tools and Thesauri

1. Carley, S. (September, 2009) GeoMap Tool Macro for VantagePoint and Google Earth.

2. Carley, S. (October, 2009). Citation Counter Macro for Vantage Point and Web of Science.

3. Carley, S. (January, 2010,). Citation Extractor Macro for Vantage Point and Web of Science.

4. Kay, L. (January, 2009). Pajek Network, Vector, and Partition Macros for VantagePoint.

5. Kay, L. (January, 2009). Catenate Macro for VantagePoint.

6. Kay, L. (November, 2009). Random selection Macro for VantagePoint.

7. Kay, L. (November, 2009). Macro for estimating number of internal and external collaborators for VantagePoint.

8. Kay, L. (July, 2009). Thesauri for patent record classification based on kind codes, patent authorities, publication dates, and publication number for VantagePoint and Patstat.

9. Kay, L. (March, 2009). Thesauri for global affiliation name clean up and organizational type classification.

10. Tang, L. and **Walsh J.** (2009, May). Name disambiguation algorithm.

11. Tang, L. (January, 2009). Chinese affiliation thesaurus for Vantage Point.

12. Tang, L. (January, 2009). Chinese researchers thesaurus for Vantage Point.

13. Wang, J. (January, 2010). Funding agency thesaurus for Vantage Point and Web of Science.

Press

1. **Allenby, Braden.** April 16, 2012. Exemplary faculty named President's Professors. ASU News. https://asunews.asu.edu/20120418_presidents_professors

2. **Allenby, Braden**. October 15, 2009. Organization Analyzes How New War Weapons will Impact Society. Arizona State University News. http://asunews.asu.edu/20091015_consortium

   a) October 15, 2009 – Physorg. http://www.physorg.com/print174841213.html

3. Arizona State University Insight News. October 9, 2009. InnovationSpace takes on New Challenges. Page 6. http://asunews.asu.edu/files/20091009.pdf

4. Arizona State University News. March 1, 2010. ASU faculty, students present at world's largest science meeting. http://asunews.asu.edu/20100305_AAASroundup

5. Arizona State University News. October 19, 2010. ASU awarded $6.5 million to study nanotechnology in society. http://asunews.asu.edu/20101015_cnsrenewal

   a) October 12, 2010 – NSF. http://nsf.gov/news/news_summ.jsp?cntn_id=117862&org=NSF&from=news
   b) October 13, 2010 – EurekAlert. http://www.eurekalert.org/pub_releases/2010-10/asu-asu101310.php
   c) October 13, 2010 – First Science. http://www.firstscience.com/home/news/science-business/arizona-state-university-awarded-6-5-million-to-study-nanotechnology-and-society_93553.html
   d) October 14, 2010 – R&D. http://www.rdmag.com/News/Feeds/2010/10/policy-arizona-state-university-awarded-65-million-to-st/
   e) October 14, 2010 – Phoenix Business Journal. http://www.bizjournals.com/phoenix/stories/2010/10/11/daily54.html

f) October 14, 2010 – Safe Nano. http://www.safenano.org/SingleNews.aspx?NewsId=1095
g) October 14, 2010 – Molecular Station. http://www.molecularstation.com/science-news/2010/10/arizona-state-university-awarded-6-5-million-to-study-nanotechnology-and-society/
h) October 14, 2010 – Physorg. http://www.physorg.com/wire-news/48509977/arizona-state-university-awarded-65-million-to-study-nanotechnol.html
i) October 14, 2010 – Bio-Medicine. http://72.167.81.51/biology-technology-1/Arizona-State-University-awarded--246-5-million-to-study-nanotechnology-and-society-17617-1/
j) October 14, 2010 – Nanowerk. http://www.nanowerk.com/news/newsid=18510.php
k) October 15, 2010 – Scientific Computing. http://www.scientificcomputing.com/WelcomeBack.aspx
l) October 15, 2010 – Nano Science News. http://www.nanonews.tv/documents/sciencepressreleases.html
m) October 15, 2010 – AzoNano. http://www.azonano.com/news.asp?newsID=20020
n) October 19, 2010 – Nanotechnology Development. http://www.nanotechnologydevelopment.com/investment/nsf-award-of-65-million-to-arizona-state-university-to-study-nanotechnology-and-society.html
o) October 20, 2010 – ElectroIQ. http://www.electroiq.com/index/display/nanotech-wire-news/1283651372.html

6. Arizona State University, Research Magazine. Spring 2009. Nano is now! Pages 12-17. http://researchstories.asu.edu/files/past_issues/2009_spring.pdf

7. **Barrientos Rastrojo, Jose**. 2009. Review: CNS Yearbook of Nanotechnology in Society Vol. 1. Argumentos de Razon Technica. http://cns.asu.edu/files/home_Yearbook-of-Nanotechnology-Vol1-translation.pdf

8. **Benn, Troy**. July 30, 2010. Feeding your Research into the Policy Debate. Science Careers. http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2010_07_30/caredit.a1000074

9. **Bennett, Ira.** May 17, 2012. Transforming and Repositioning the American Science Museum: New Tools for Engaging the Public. Talk.

10. **Boradkar, Prasad**. September 13, 2010. Culture of objects is focus of professor’s new book. Arizona State University News. http://asunews.asu.edu/20100910_Boradkar_Things

11. **Boradkar, Prasad**. November 2, 2010. InnovationSpace: Bringing water to rural Arizona. Arizona State University News. http://asunews.asu.edu/video_20101029_InnovationSpace

12. **Brossard, Dominique.** February 1, 2013. Preserving Science News in an online World. Science Friday. http://sciencefriday.com/segment/02/01/2013/preserving-science-news-in-an-online-world.html

    a) February 1, 2013 – NPR. http://www.npr.org/2013/02/01/170855378/preserving-science-news-in-an-online-world

b) February 1, 2013 – North Country Public Radio. http://www.northcountrypublicradio.org/news/npr/170855378/preserving-science-news-in-an-online-world

13. **Brossard, Dominique** and **Scheufele, Dietram A.** March 2, 2013. This Story Stinks. The New York Times. http://www.nytimes.com/2013/03/03/opinion/sunday/this-story-stinks.html

14. Cacciatore, Michael A., **Dietram A. Scheufele**, and **Elizabeth A. Corley**. May 2011. From enabling technology to applications: The evolution of risk perceptions about nanotechnology. Public Understanding of Science. 20:3. http://pus.sagepub.com/content/20/3/385.abstract?etoc

    a) May 2011 – Science Index. http://scienceindex.com/stories/1655760/From_enabling_technology_to_applications_The_evolution_of_risk_perceptions_about_nanotechnology.html

15. **Center for Nanotechnology in Society** and **Selin, Cynthia.** April 11, 2012. Redesigning the future with Emerge. ASU Art Museum. http://asuartmuseum.wordpress.com/2012/04/11/redesigning-the-future-with-emerge/

16. **Center for Nanotechnology in Society Science Café.** April 20, 2012. Science Café: Redesigning the Future: Where is science taking us? Is that where we want to go? Arizona Science Center. http://sustainability.asu.edu/docs/gios/events/other-events/2012/redesigning-future-cafe/redesigning-future-cafe.pdf

17. **Center for Nanotechnology in Society.** May 1, 2012. Kids invited to design the future at ASU Art Museum. Easy Valley Tribune. http://eastvalleytribune.com/get_out/article_1a1fd71a-9304-11e1-b674-001a4bcf887a.html

18. **Center for Nanotechnology in Society.** June 7, 2012. Niño Futures. Public Understanding of Science. http://pus-journal.blogspot.com/2012/06/nano-futures.html

19. **Center for Nanotechnology in Society**. November 20, 2012. Nanotechnology in Arizona: Market Report. AZO Niño. http://www.azonano.com/article.aspx?articleID=3132

20. **Center for Nanotechnology in Society.** December 10, 2012. Futures cape City Tour educates public on nanotechnology in Phoenix. Downtown Devil. http://downtowndevil.com/2012/12/10/36475/futurescape-city-tour-nanotechnology/

21. **Center for Nanotechnology in Society Science Café.** February 15, 2013. Science Café: Evolving in the Niño City. Arizona SciTech Festival.

22. **Center for Nanotechnology in Society Science Café.** March 15, 2013. Science Café: Power in the Niño City. Arizona SciTech Festival.

23. **Corley, Elizabeth A.** July 19, 2011. National Nanotechnology Initiative releases 4 workshop reports from the nanoEHS Series. National Nanotechnology Initiative. http://www.nano.gov/node/648

    a) July 20, 2011 – EurekAlert. http://www.eurekalert.org/pub_releases/2011-07/nnco-nrf072011.php

b) July 21, 2011 – Bio-Medicine. http://www.bio-medicine.orgwww.bio-medicine.org/medicine-news-1/NNI-releases-4-workshop-reports-from-the-nanoEHS-Series-83825-1/
c) July 21, 2011 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=43020
d) July 21, 2011 – Nanowerk. http://www.nanowerk.com/news/newsid=22183.php
e) July 21, 2011 – R&D. http://www.rdmag.com/News/Feeds/2011/07/materials-nni-releases-4-workshop-reports-from-the-nanoehs-s/
f) July 26, 2011 – InterNano. http://www.internano.org/content/view/555/251/
g) August 21, 2011 – Meridian Institute. http://www.merid.org/Content/News_Services/Nanotechnology_and_Development_News/Articles/2011/Jul/21/new_papers.aspx
h) October 21, 2011 – NanoEthics Bank. http://ethics.iit.edu/NanoEthicsBank/node/2635

24. **Corley, Elizabeth A.**, and **Dietram A. Scheufele.** January 2010. Outreach Going Wrong? When we talk nano to the public, we are leaving behind key audiences. The Scientist. 24:22.

    a) January 2010 – Docstoc. http://www.docstoc.com/docs/45489662/OUTREACH-GOING-WRONG--When-we-talk-nano-to-the-public--we-are

25. **Corley, Elizabeth A.** and **Dietram A. Scheufele.** January 21, 2011. Study finds flaw in surveying public opinion about science. Arizona State University News. http://asunews.asu.edu/20110119_puosstudy

    a) January 13, 2011 – North Carolina State University News. http://news.ncsu.edu/releases/wmsbindersurveys/
    b) January 13, 2011 – RxPG News. http://www.rxpgnews.com/research/Study-highlights-flaw-in-common-approach-of-public-opinion-surveys-about-science_465206.shtml
    c) January 13, 2011 – E! Science News. http://esciencenews.com/articles/2011/01/13/study.highlights.flaw.common.approach.public.opinion.surveys.about.science
    d) January 13, 2011 – News Guide US. http://newsguide.us/education/science/Study-highlights-flaw-in-common-approach-of-public-opinion-surveys-about-science/
    e) January 13, 2011 – Physorg. http://www.physorg.com/news/2011-01-highlights-flaw-common-approach-opinion.html
    f) January 13, 2011 – EurekAlert. http://www.eurekalert.org/pub_releases/2011-01/ncsu-shf011311.php
    g) January 13, 2011 – University of Wisconsin College of Agricultural and Life Sciences News. http://news.cals.wisc.edu/communities/2011/01/13/study-highlights-flaw-in-common-approach-of-public-opinion-surveys-about-science/
    h) January 14, 2011 – Science Daily. http://www.sciencedaily.com/releases/2011/01/110113101709.htm
    i) January 18, 2011 – US News: Science. http://www.usnews.com/science/articles/2011/01/18/study-highlights-flaw-in-common-approach-of-public-opinion-surveys-about-science

j) January 19, 2011 – Media Newswire. http://media-newswire.com/release_1139378.html
k) January 20, 2011 – AZoNano. http://www.azonano.com/news.asp?NewsID=21286

26. **Cozzens, Susan E.** and **Jameson M. Wetmore**. November 18, 2010. Nanotechnology, equity issues explored in new book. Arizona State University News. http://asunews.asu.edu/20101118_cnsyearbook2

    a) November 18, 2010 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=40859
    b) November 18, 2010 – Nanowerk. http://www.nanowerk.com/news/newsid=19074.php
    c) November 18, 2010 – First Science. http://www.firstscience.com/home/news/science-business/nanotechnology-and-equity-issues-explored-in-new-book-page-1-1_95836.html
    d) November 18, 2010 – EurekAlert. http://www.eurekalert.org/pub_releases/2010-11/asu-nae111810.php
    e) November 18, 2010 – Nanotech. http://nanotech.sujanani.com/news/?p=33001242
    f) November 18, 2010 – R&D. http://www.rdmag.com/News/Feeds/2010/11/materials-nanotechnology-and-equity-issues-explored-in-new-b/
    g) November 18, 2010 – Scientific Computing. http://www.scientificcomputing.com/news-nanotechnology-and-equity-issues-explored-in-new-b-111810.aspx
    h) November 19, 2010 – AzoNano. http://www.azonano.com/news.asp?newsID=20609
    i) November 20, 2010 – ElectroIQ. http://www.electroiq.com/index/display/nanotech-wire-news/1307302203.html
    j) December 12, 2010 – Nanotechnology Today. http://nanotechnologytoday.blogspot.com/2010/12/nanotechnology-and-equity-issues.html

27. Davies, Sarah. 30 November 2010. Hedonistic Travel: The Pleasures of Carlessness. Blooming Rock. http://bloomingrock.com/?p=1423

28. **Debone, Jason A.**, Ashley A. Anderson, **Daniel Lee Klein man**, **Motile Colin**, and **Maria Powell**. May 2011. Virtual deliberation? Prospects and challenges for integrating the Internet in consensus conferences. Public Understanding of Science. 20:3. http://pus.sagepub.com/content/20/3/367.abstract?etoc

    a. May 2011 – Mendeleyev. http://www.mendeley.com/research/virtual-deliberation-prospects-challenges-integrating-internet-consensus-conferences-2/

29. de Gruyter, Naartje. November 2009. "Ethiek op de werkvloer: Bewustwording is het toverwoord." *CSG-magazine LEV*. 2:18-22.

30. **Dirks, Gary**. April 22, 2011. ASU's Gary Dirks chases the sun. Arizona State University News. http://asunews.asu.edu/20110422_GaryDirks

    a. April 22, 2011 – Academic Keys. http://humanities.academickeys.com/all/news.php?dothis=display&news[IDX]=1905
    b. April 22, 2011 – Arizona Solar Center. http://www.azsolarcenter.org/news-highlights/541-asus-gary-dirks-chases-the-sun.html

c. April 22, 2011 – Planet Forward. http://planetforward.org/productions/gary-dirks/

31. Euroresidentes. January 23, 2009. Call for Experts in Nanotechnology. http://translate.google.com/translate?hl=en&sl=pt&tl=en&u=http%3A%2F%2Fwww.euroresidentes.com%2FBlogs%2Fnanotecnologia%2F2009_01_01_archive.html

    a) January 20, 2009 – Nanowerk. http://www.nanowerk.com/news/newsid=8957.php

32. **Fisher, Erik**. February 11, 2014. Bioethics Commission Testimony. Presidential Commission for the Study of Bioethical Issues. Sixteenth Meeting. Washington, DC. http://www.tvworldwide.com/events/bioethics/140210/

33. **Fisher, Erik**. June 15, 2011. Franco-British Workshop on Responsible Innovation: Responsible Innovation R&D-The U.S. Experience. French Embassy. http://www.ambafrance-uk.org/Videos-and-presentations-from-the

    a. July 6, 2011 – Daily Motion. http://www.dailymotion.com/video/xj5nh1_talk-06-15-erik-fisher-franco-british-workshop-on-responsible-innovation_tech

34. **Fisher, Erik**. May 16, 2011. Responsible Research and Innovation Workshop. European Commission. http://ec.europa.eu/research/science-society/document_library/pdf_06/responsible-research-and-innovation-workshop-newsletter_en.pdf

35. **Fisher, Erik**. Spring 2011. STIR Workshop 2: International Network for Responsible Innovation. Center for Nanotechnology in Society. http://cns.asu.edu/stir/workshops.php?ws=4

    a. Spring 2011 – Genome British Columbia. http://www.genomebc.ca/portfolio/genomics-and-society/genomics-and-society-newsletter/

36. **Fisher, Erik.** Causing a STIR. Center for Science and Technology Policy Research. http://sciencepolicy.colorado.edu/news/fisher.pdf

37. **Fisher, Erik** and Michael Lightner. December 2009. Entering the Social Experiment: A Case for the Informed Consent of Graduate Engineering Students. Informaworld. http://www.informaworld.com/smpp/section?content=a918038010&fulltext=713240928

38. Frodeman, Robert. November 23, 2010. Experiments in Field Philosophy. Opinionator – The New York Times. http://opinionator.blogs.nytimes.com/2010/11/23/experiments-in-field-philosophy/

39. Frow, Emma. November 16, 2010. Clear Skies, Cacti and Collaborations. Genotype. http://esrcgenomicsforum.blogspot.com/2010/11/clear-skies-cacti-and-collaborations.html

40. Galileo: Journal of Science and Global Issues. December 9, 2008. If the Assessment is Moral. http://translate.google.com/translate?hl=en&sl=it&tl=en&u=http%3A%2F%2Fwww.galileonet.it%2Fprimo-piano%2F10909%2Fse-il-giudizio-e-morale%3Fprint%3D1

41. **Garreau, Joel**. January 12, 2010. Technology and Enhancement. Coast to Coast AM Radio Show with George Noory. http://www.coasttocoastam.com/show/2010/01/12

42. **Gust, Devens**. April 30, 2009. DOE Funds Bio-Inspired Solar Fuel Center at ASU. Arizona State University News. http://asunews.asu.edu/20090430_EFRC

    a) May 6, 2009 – SolarServer. http://www.solarserver.com/solar-magazine/solar-news/current/us-department-of-energy-funds-solar-fuel-center-at-arizona-state-university.html

43. **Guston, David H.** March 7, 2014. ASU Director founds new journal on responsible innovation. Arizona State University News https://asunews.asu.edu/20140307-jri-release

44. **Guston, David H.** February 20, 2014. ASU-led symposium at AAAS conference examines responsible innovation across cultures, political settings. Arizona State University News https://asunews.asu.edu/2014217-AAAS-responsible-innovation-symposium

45. **Guston, David H.** March 30, 2010. Public Engagement with Nanotechnology. 2020 Science. http://2020science.org/2010/03/30/public-engagement-with-nanotechnology

    a) March 30, 2010 – NanoCEO. http://www.nanoceo.net/nanonews_03_30_10

46. **Guston, David H.** July 4, 2010. A 'nano' overdose? Science and Development Network. http://scidevnet.wordpress.com/2010/07/04/a-%E2%80%98nano%E2%80%99-overdose/

47. **Guston, David H.** July 16, 2010. Focus: Preventative Governance. Fondazione Giannino Bassetti. http://www.fondazionebassetti.org/en/focus/2010/07/preventative_governance.html

48. **Guston, David H.** July 17, 2010. Reinventing Technology Assessment for the 21st Century. Science Debate. http://www.sciencedebate.org/www/index/php?id=77

    a) April 28, 2010 – Arizona State University News. http://asunews.asu.edu/20100428_cspoecast
    b) April 29, 2010 – R&D. http://www.rdmag.com/White-Papers/2010/04/Policy-and-Industry-Reinventing-technology-assessment-for-the-21st-century/

49. **Guston, David H.** August 9, 2010. Curious about nanoscience? Encyclopedia has answers. Arizona State University News. http://asunews.asu.edu/20100805_nanoencyclopedia

    a) August 5, 2010 – EurekAlert. http://www.eurekalert.org/pub_releases/2010-08/asu-nre080510.php
    b) August 5, 2010 – AzoNano. http://www.azonano.com/news.asp?newsID=18920
    c) August 5, 2010 – Nanowerk. http://www.nanowerk.com/news/newsid=17537.php
    d) August 6, 2010 – Bioscience Technology. http://www.biosciencetechnology.com/News/Feeds/2010/08/industries-new-resource-examines-questions-about-the-role-of-/
    e) August 6, 2010 – News Blaze. http://newsblaze.com/story/20100806123036zzzz.nb/topstory.html

f) August 6, 2010 – R&D. http://www.rdmag.com/News/Feeds/2010/08/materials-new-resource-examines-questions-about-the-role-of-/
g) August 6, 2010 – Physorg. http://www.physorg.com/wire-news/42548277/new-resource-examines-questions-about-the-role-of-nanoscience.html
h) August 6, 2010 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=39495
i) August 7, 2010 – Nanovip. http://www.nanovip.com/new-resource-examines-questions-about-the-role-of-nanoscience.html
j) August 8, 2010 – Red orbit. http://www.redorbit.com/news/science/1901941/revolution_on_a_nano_scale/index.html
k) August 9, 2010 – Medical News Today. http://www.medicalnewstoday.com/articles/197205.php
l) August 9, 2010 – Emedist. http://emedist.com/pathology/questions-about-the-role-of-nanoscience-examined-in-encyclopedia-of-nanoscience-and-society/
m) August 9, 2010 – Nanite News. http://www.nanitenews.com/research/New_resource_examines_questions_about_the_role_of_nanoscience.asp?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+NaniteNews+%28Nanotechnology+News+And+Research%29

50. **Guston, David H.** August 17, 2010. Georgia Tech researchers highlight implications of nanotechnology in new Encyclopedia of Nanoscience and Society. http://spp.gatech.edu/aboutus/newsarchive

    a) October 14, 2010 – Georgia Tech News. http://www.gatech.edu/newsroom/release.html?nid=62178
    b) October 23, 2010 – Nano Techwire. http://www.nanotechwire.com/news.asp?nid=10854

51. **Guston, David H.** October 1, 2010. Reference Reviews. Library Journal. http://www.libraryjournal.com/lj/ljinprintcurrentissue/886705-403/reference_reviews_october_1_2010.html.csp

    a) October 1, 2010 – The Free Library. http://www.thefreelibrary.com/Encyclopedia+of+nanoscience+and+society%3b+2v.-a0236325480

52. **Guston, David H.** October 5, 2010. Societal and Ethical Issues in Nanotechnology. Harvard University Center for Nanoscale Systems. www.cns.harvard.edu/nnin/sei.php

53. **Guston, David H.** October 26, 2012. The Much-Needed and Sane Congressional Office That Gingrich Killed Off and We Need Back. The Atlantic. http://www.theatlantic.com/technology/archive/2012/10/the-much-needed-and-sane-congressional-offfice-that-gingrich-killed-off-and-we-need-back/264160/

54. **Guston, David H.** November 30, 2010. Anticipatory Governance of Emerging Technologies. Scientists and Engineers for America. http://us1.campaign-archive1.com/?u=b3cf515e44b296da2a0004fc0&id=7d9d89bf34

a) November 30, 2010 – Slideshare. http://www.slideshare.net/seforaDOTorg/sea-virtual-seminar-david-guston-nov-30-700-pm-et

55. **Guston, David H.** December 15, 2010. Cluster One Highlights: Toward the Regulation of Nanomaterials Conference. Youtube. http://www.youtube.com/watch?v=LzdQT4rFDNA&feature=player_embedded#

56. **Guston, David H.** January 6, 2011. Most-Cited Articles as of January 1, 2011. Sage Journals Online – Social Studies of Science. http://sss.sagepub.com/reports/most-cited

57. **Guston, David H.** January 7, 2011. 2010 – That was the year that was. Fondazione Giannino Bassetti. http://www.fondazionebassetti.org/en/focus/2011/01/2010_-_that_was_the_year_that.html

58. **Guston, David H.** February 21, 2011. Are We Alone? Make Contact with Science: Nano Nano. SETI Institute. http://radio.seti.org/episodes/Nano_Nano

    a) February 23, 2011 – Arizona State University News. http://asunews.asu.edu/20110223_nanonanoshow

59. **Guston, David H.** June 15, 2011. Chuck Roger: Programming Scientists to Perform Social Engineering. The Dakota Beacon. http://dakotabeacon.com/entry/chuck_roger_programming_scientists_to_perform_social_engineering/

    a. June 13, 2011 – National Association of Scholars. http://www.nas.org/articles/Programming_Scientists_to_Perform_Social_Engineering
    b. June 14, 2011 – Clear Thinking. http://www.chuckroger.com/2011/06/14/programming-scientists-to-perform-social-engineering/

60. **Guston, David H.** and Douglas Sylvester. 2009. Sizing Up the Nanotech Situation: How Technology Will Be Used Poses Ethical, Moral and Environmental Questions. Tech Connect, The Nano Issue. http://www.techconnect-digital.com/techconnect/2009fall?pg=25&search_term=guston&search_term=guston#pg25

61. **Guston, David H.** July 2, 2012. Big Picture Science – Nano Nano: David Guston. Blog Picture Science. http://radio.seti.org/blog/2012/07/big-picture-science-nano-nano-david-guston/

62. **Guston, David H.** and **Sanborn, Regina.** January 13, 2012. Students operate on nanoscale. The State Press.

63. Hall, Hollie. September 17, 2010. Science Outside the Lab. Integrative Graduate Education and Research Internship. http://www.igert.org/stories/44

64. **Haq, Cynthia.** June 19, 2012. Doctor, plant biologist among those named to Wisconson Academy. Milwaukee Journal Sentinel. http://www.jsonline.com/blogs/news/159508675.html

65. Harsh, Matthew. May 12, 2011. Careful design is key to success of development prizes. Science and Development Network. http://www.scidev.net/en/opinions/careful-design-is-key-to-success-of-development-prizes-1.html

66. Hays, Sean. April 19, 2011. Can "Do-It-Yourself" Biology handle Our Biggest health Challenges? Arizona State University. http://asu.edu/president/email/dcinvitation.html

67. Hendrickson, Kristen and **Scott Lefler**. November 19, 2010. Science Café: You are What You Eat – America's Relationship with Food. East Valley Tribune. http://www.eastvalleytribune.com/calendar/get_out_calendar/event_bb9fe588-d6cc-5a30-a7d1-897df49f67fd.html

    a) August 20, 2010 – Phoenix Science Café. http://phoenixsciencecafe.wordpress.com/2010/08/30/you-are-what-you-eat-americas-relationship-with-food/
    b) November 18, 2010 – College Times. http://media.www.ecollegetimes.com/media/storage/paper991/news/2010/11/18/Calendar/16.Things.To.Do.This.Week-3959902.shtml
    c) November 19, 2010 – Eventful. http://eventful.com/phoenix/events/science-cafe-you-you-eat-americas-relationship-/E0-001-035239672-0
    d) November 19, 2010 – Facebook. http://www.facebook.com/event.php?eid=105425882860281
    e) November 19, 2010 – Showup. http://phoenix.showup.com/event/detail/440953956/Science_Cafe_You_Are_What_You_Eat_Americas_Relationship_with_Food

68. Jornal do Brazil – The First Brazilian Internet Newspaper. June 7, 2009. New Border Regulation. http://translate.google.com/translate?hl=en&sl=pt&u=http://jbonline.terra.com.br/leiajb/noticias/2009/06/07/ciencia/nova_fronteira_da_regulacao.asp&ei=7HKqS5CPK4ywsgPntMC9Bg&sa=X&oi=translate&ct=result&resnum=1&ved=0CAoQ7gEwAA&prev=/search%3Fq%3Dnova%2Bfronteira%2Bda%2Bregulacao%26hl%3Den

69. **Lindsay, Stuart**. August 30, 2010. Lindsay receives White House honors for 'Recovery Act' research. Arizona State University News. http://asunews.asu.edu/20100826_lindsaywhitehousehonors

70. **Marchant, Gary**. October 29, 2010. ASU faculty receive federal nanotech renewal grant. Arizona State University News. http://asunews.asu.edu/20101029_nanogrant?utm_source=Arkayne.com&utm_medium=Plugin&utm_campaign=ASU%20News

    a) October 29, 2010 – AzoNano. http://www.azonano.com/news.asp?newsID=20260
    b) October 30, 2010 – ElectroIQ. http://www.electroiq.com/index/display/nanotech-wire-news/1293323157.html
    c) October 30, 2010 – Nanowerk. http://www.nanowerk.com/news/newsid=18743.php
    d) October 31, 2010 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=40598
    e) October 31, 2010 – Nano Techwire. http://www.nanotechwire.com/news.asp?nid=10904
    f) November 1, 2010 – Eureka Alert. http://www.eurekalert.org/pub_releases/2010-11/asu-fnr110110.php

g) November 1, 2010 – First Science. http://www.firstscience.com/home/news/chemistry-physics-and-materials-sciences/federal-nanotechnology-renewal-grant-awarded-to-asu-faculty_94670.html
h) November 2, 2010 – R&D. http://www.rdmag.com/News/Feeds/2010/11/policy-federal-nanotechnology-renewal-grant-awarded-to-as/

71. **Marchant, Gary**, **David Guston** and **Jane Maienshein**. May 2011. Rapid Revolution: ASU faculty explore how to manage technology's advance. ASU Magazine. http://trendmag2.trendoffset.com/publication/?i=70000

72. **Marchant, Gary**, **Kenneth Abbott** and **Douglas Sylvester**. December 2, 2009. LST Builds First Global Nanotech Regulation Database. Arizona State University News. http://asunews.asu.edu/2009122_LSTNanotechnology

a) December 2, 2009 – Physorg. http://www.physorg.com/news178997767.html
b) December 2, 2009 – Flinn Foundation. http://www.flinn.org/bio-briefs/2122
c) December 3, 2009 – Institute of Nanotechnology. http://www.nano.org.uk/news/290/
d) December 7, 2009 – Nanoforum. http://www.nanoforum.org/nf06~modul~showmore~folder~99999~scc~news~scid~4038~.html?action=longview
e) December 8, 2009 – InterNano. http://www.internano.org/content/view/325/95/
f) January 5, 2010 – Nanodialog. http://nanodialog.eu/index.php?option=com_content&task=view&id=85&Itemid=38

73. **Miller, Clark A.** July25, 2010. Viewpoints: Coverage of massive problems leaves the public feeling helpless. The Sacramento Bee. http://www.sacbee.com/2010/07/25/2911646/coverage-ofmassive-problems-eaves.html#ixzz0uuFqqXkq

74. **Miller, Clark A.** October 26, 2010. Why Nano Matters: Saving the World. NISE Network. http://www.nisenet.org/blogs/real_world_nano/why_nano_matters_saving_world

75. **Petrucci, Darren** and Rider W. Foley. February 26, 2014. ASU Collaborators use scenarios to explore future of Phoenix. Arizona State Unviersity News. https://asunews.asu.edu/20140226-scenarios-future-phoenix

76. Phoenix Business Journal. April 3, 2009. E-mail, Instant Messaging and Internet Use are Rampant, but Do They Make Us More Productive? http://www.bizjournals.com/phoenix/stories/2009/04/06/focus1.html

77. Phoenix Business Journal. October 17, 2010. Nanotechnology Could Spur Medical Breakthroughs. http://www.bizjournals.com/phoenix/stories/2010/10/18/focus1.html

78. Phoenix Business Journal. October 17, 2010. 5 Questions: About Nanoscience. http://www.bizjournals.com/phoenix/stories/2010/10/18/focus2.html

79. Pirtle, Zachary. January 4, 2011. Bridging Technological and Philosophical Worlds. Arizona State University News – Ira A. Fulton Schools of Engineering. http://engineering.asu.edu/news/8215

a) January 4, 2011 – Arizona State University News. http://asunews.asu.edu/node/17462

80. **Porter, Alan L.** and **Jan Youtie**. September, 2009. Where Does Nanotechnology Belong in the Map of Science. *Nature Nanotechnology*, 4: 534-536. http://www.nature.com/nnano/journal/v4/n9/full/nnano.2009.207.html

   a) September 7, 2009 - Georgia Tech Research News. http://gtresearchnews.gatech.edu/mapping-nanotechnology/
   b) September 7, 2009 – EurekAlert. http://www.eurekalert.org/pub_releases/2009-09/giot-act090409.php
   c) September 7, 2009 – AZoNano. http://www.azonano.com/news.asp?newsID=13504
   d) September 7, 2009 – ScienceDaily. http://www.sciencedaily.com/releases/2009/09/090907141912.htm
   e) September 7, 2009 – e! Science News. http://esciencenews.com/articles/2009/09/07/analysis.confirms.nano.related.research.has.strong.multidisciplinary.roots
   f) September 7, 2009 – R&D. http://www.rdmag.com/News/Feeds/2009/09/life-sciences-analysis-confirms-that-nano-related-research-has-s/
   g) September 7, 2009 – Physorg. http://www.physorg.com/news171521941.html
   h) September 7, 2009 – NewsGuide. http://newsguide.us/index.php?path=/education/science/Analysis-confirms-that-nano-related-research-has-strong-multidisciplinary-roots/&date=2009-09-07
   i) September 7, 2009 – First Science. http://www.firstscience.com/home/news/breaking-news-all-topics/analysis-confirms-that-nano-related-research-has-strong-multidisciplinary-roots_70063.html
   j) September 9, 2009 – Flinn Foundation. http://foundation.flinn.org/bio-briefs/1843
   k) September 9, 2009 – newswise. http://www.newswise.com/articles/nano-research-has-strong-multidisciplinary-roots
   l) September 9, 2009 – innovations report. http://www.innovations-report.com/html/reports/studies/analysis_confirms_nano_related_research_strong_139335.html
   m) October 23, 2009 – Nanotechnology Today. http://nanotechnologytoday.blogspot.com/2009/10/analysis-confirms-that-nano-related.html

81. **Posner, Jonathan**. March 3, 2010. Exploring the Implications of Nanotechnology. Arizona State University News. http://asunews.asu.edu/20100226_posnernanotechnology

   a) February 27, 2010 – Nanowerk. http://www.nanowerk.com/news/newsid=15076.php
   b) March 3, 2010 – Physorg. http://www.physorg.com/wire-news/29076975/exploring-the-implications-of-nanotechnology.html

82. **Posner, Jonathan**. April 30, 2010. Nanotechnology Promises Water Resource Gains But Raises Concerns. Arizona Water Resource – Spring 2010. http://ag.arizona.edu/azwater/awr/awr-Spring-2010.html

83. **Posner, Jonathan**. May 2010. Too Small to Ignore. Arizona State University Magazine. http://trendmag2.trendoffset.com/publication/index.php?i=37797&m=&l=&p=4&pre=&ver=swf

84. **Robert, Jason**. November 23, 2010. Professors Study Repercussions of Living Longer. State Press. http://www.statepress.com/2010/11/23/professors-study-repercussions-of-living-longer/

85. **Sarewitz, Daniel** and **Jameson Wetmore**. August 27, 2010. Blogging from France: science and public debate. Arizona State University News. http://asunews.asu.edu/20100824_eurosummerschool

86. **Sarewitz, Daniel**, **Lee Gutkind**, **David Guston**, and **Jameson Wetmore**. May 26, 2011. New faculty books: From nanotechnology to creative nonfiction. Arizona State University News. https://asunews.asu.edu/20110526_newfacultybooks

87. **Scheufele, Dietram A.** and **Elizabeth A. Corley**. June 19, 2009. Scientists and Public Differ on Views about Nanotechnology Regulation. University of Wisconsin-Madison News. http://www.news.wisc.edu/16840

    a) June 19, 2009 – Physorg. http://www.physorg.com/news164642077.html
    b) June 19, 2009 – Nano Techwire. http://nanotechwire.com/news.asp?nid=8103
    c) June 19, 2009 – AzoNano. http://www.azonano.com/news.asp?newsID=12164
    d) June 19, 2009 – Nanowerk. http://www.nanowerk.com/news/newsid=11272.php
    e) June 22, 2009 – Nanotechnology Now. http://nanotech-now.com/news.cgi?story_id=33616
    f) June 24, 2009 – Arizona State University News. http://asunews.asu.edu/20090622_nanotechnologystudy

88. **Scheufele, Dietram A.** and **Elizabeth A. Corley**. January 12, 2010. U.S. Faces Widening Information Gap on Nanotechnology. University of Wisconsin-Madison News. http://www.news.wisc.edu/17527

    a) January 1, 2010 – The Scientist. http://www.the-scientist.com/2010/1/1/22/1/
    b) January 11, 2010 – Nanotechnology Now. http://nanotech-now.com/news.cgi?story_id=36214
    c) January 12, 2010 – Safe Nano. http://www.safenano.org/SingleNews.aspx?NewsID=948
    d) January 12, 2010 – Arizona State University News. http://asunews.asu.edu/20100111_nanotechreport
    e) January 12, 2010 – Wisconsin Technology Network News. http://wistechnology.com/articles/6985/
    f) January 12, 2010 – Physorg. http://www.physorg.com/print182534558.html
    g) January 13, 2010 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=36243
    h) January 13, 2010 – Nano Techwire. http://www.nanotechwire.com/news.asp?nid=9282

89. **Scheufele, Dietram A.**, **Dominique Brossard**, **Sharon Dunwoody**, **Elizabeth A. Corley**, **David H. Guston** and Hans Peter Peters. August 4, 2009. Are Scientists Really Out of Touch? The Scientist. http://www.the-scientist.com/news/display/55875/

90. **Scheufele, Dietram A.** August 1, 2012. Flavors of Uncertainty: The Difference between Denial and Debate. Environmental Health Perspectives.
    a) August 1, 2012 – Medscape Today. http://www.medscape.com/viewarticle/768722

91. **Scheufele, Dietram A.** November 8, 2012. UW contingent among Kavli Frontiers of Science fellows. University of Wisconsin Madison News. http://www.news.wisc.edu/21250

92. **Scheufele, Dietram A.** March 8, 2013. A brave new (online) world: Emerging technologies at the intersection of science, policy, and rapidly changing media environments. Talk.

93. **Seager, Thomas P.** July 16, 2012. Are smartphone apps influencing our humanity?. Arizona State University News. https://asunews.asu.edu/20120716_inthenews_apps

94. **Selin, Cynthia** and **Wiek, Arnim**. December 17, 2012. Sustainability & Nanotechnology: Generating Excitement in Emerging Sciences. The Tomorrow Project. http://us.tomorrow-projects.com/2012/12/sustainability-nano-technology-generating-excitement-in-emerging-sciences/

95. **Selin, Cynthia**. December 2012. Future Forward. ASU Magazine.

96. **Shapira, Phillip** and Jue Wang. December 11, 2010. Nanotechnology Research: Study Finds Web of International Collaboration in $8.6 Billion Worldwide Research Activity. Georgia Tech Research News. http://gtresearchnews.gatech.edu/nanotech-international-collaboration/
    a) December 9, 2010 – Physorg. http://www.physorg.com/news/2010-12-web-international-collaboration-boosts-worldwide.html
    b) December 9, 2010 – Science Blog. http://scienceblog.com/40957/web-of-international-collaboration-boosts-worldwide-nanotechnology-research/
    c) December 11, 2010 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=41109
    d) December 11, 2010 – Infogreen Global. http://infogreenglobal.com/international-collaboration-boosts-nanotechnology-research/
    e) December 12, 2010 – Nano Techwire. http://nanotechwire.com/news.asp?nid=11255
    f) December 12, 2010 – Interesting Tech. http://interesting.rk.net.nz/?p=9906
    g) December 16, 2010 – Scientific Computing. http://www.scientificcomputing.com/PrinterFriendly.aspx?id=35816&url=http%3A%2F%2Fwww.scientificcomputing.com%2Fnews-study-finds-international-collaboration-in-nanotec-121710.aspx
    h) January 5, 2011 – Arizona State University News. http://asunews.asu.edu/20110105_nanotech_research
    i) January 6, 2011 – Nanowerk. http://www.nanowerk.com/news/newsid=19599.php
    j) January 6, 2011 – AzoNano. http://www.azonano.com/news.asp?NewsID=21122

97. Technische Universität Darmstadt. 2010. Second Annual Conference of the Society for the Study of Nanoscience and Emerging Technologies. http://www.philosophie.tu-darmstadt.de/nanobuero/snet2010/welcome.de.jsp

98. **Tillery, Stephen Helms** and **Robert, Jason.** May 2012. Thinking with the mind’s eye. ASU Magazine

99. Toor, Rebecca. September 2012. "Causing a STIR." *International Innovation*. p. 76.

100. Toor, Rebecca. September 2012. "Midstream Transformation." *International Innovation*. p. 77-79.

101. **van der Leeuw, Sander.** June 4, 2012. UN names ASU sustainability dean a 'Champion of the Earth'. Arizona State University News. https://asunews.asu.edu/20120604_UNchampionlaureate
    a) June 4, 2012 – Eureka Alert!. http://www.eurekalert.org/pub_releases/2012-06/asu-uns060412.php
    b) June 4, 2012 – News Wise. http://www.newswise.com/articles/view/590018/
    c) September 2012 – ASU Magazine

102. **van der Leeuw, Sander.** October 4, 2012. Future Tense: anticipating implications of emerging technologies. Arizona State University News. https://asunews.asu.edu/20121004_futuretense

103. **Wetmore, Jameson** April 20, 2010. ASU expert discusses 'why cars move men.' Arizona State University News. http://asunews.asu.edu/20100420_cars_wetmore

    a) April 19, 2010 – Men's Health. http://www.menshealth.com/best-life/men-and-cars

104. **Wetmore, Jameson** and Mary Jane Parmentier. December 20, 2010. Blogging from Dubai. Arizona State University News. http://asunews.asu.edu/node/17370

105. **Wetmore, Jameson**, **Elizabeth A. Corley** and Neal Woodbury. October 15, 2010. Nano Focus. Phoenix Business Journal.

106. Xenos, Michael A., Amy B. Becker, Ashley A. Anderson, **Dominique Brossard**, and **Dietram A. Scheufele**. Stimulating upstream engagement: An experimental study of nanotechnology information seeking. Social Science quarterly. 92:5. http://onlinelibrary.wiley.com/doi/10.1111/j.1540-6237.2011.00814.x/abstract

107. **Youtie, Jan** and **Phillip Shapira**. October 13, 2010. Beyond the Nobel Prize, what's next for graphene? Arizona State University News. http://asunews.asu.edu/20101012_cnsgraphenestudy

    a) October 12, 2010 – EurekAlert. http://www.eurekalert.org/pub_releases/2010-10/asu-btn101210.php
    b) October 12, 2010 – Softpedia. http://news.softpedia.com/news/Conducting-Graphene-Studies-Beyond-the-Nobel-160689.shtml
    c) October 13, 2010 – Scientific Computing. http://www.scientificcomputing.com/news-DS-Beyond-the-Nobel-Prize-Whats-Next-for-Graphene-101810.aspx#
    d) October 13, 2010 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=40392
    e) October 13, 2010 – Product Sourcing. http://www.jihsin.com/manufacturers/information-technology/beyond-the-nobel-prize-whats-next-for-graphene.html
    f) October 13, 2010 – Electronic Component News. http://www.ecnmag.com/News/2010/10/Beyond-the-Nobel-Prize,-what-s-next-for-graphene-/
    g) October 13, 2010 – ChemInsider. http://www.chem.info/News/Feeds/2010/10/topics-plant-operations-beyond-the-nobel-prize-whats-next-for-graphene-/

h) October 13, 2010 – Bio-Medicine. http://www.bio-medicine.org/biology-technology-1/Beyond-the-Nobel-Prize--whats-next-for-graphene-3F-17600-1/
i) October 13, 2010 – Physorg. http://www.physorg.com/news/2010-10-nobel-prize-big-graphene.html
j) October 13, 2010 – Nanowerk. http://www.nanowerk.com/news/newsid=18468.php
k) October 13, 2010 – R&D. http://www.rdmag.com/News/2010/10/Materials-Nanotechnology-Beyond-the-Nobel-Prize-whats-next-for-graphene/
l) October 18, 2010 – Georgia Tech News. http://ww.gatech.edu/newsroom/release.html?nid=62364

108. **Youtie, Jan** and **Philip Shapira**. May 19, 2011. Miracle Material: Two-dimensional grapheme may lead to faster electronics, stronger spacecraft and much more. National Science Foundation. http://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=119493&WT.mc_id=USNSF_1

a) May 19, 2011 – Nanotechnology Now. http://www.nanotech-now.com/news.cgi?story_id=42492
b) May 19, 2011 – NanoTechwire. http://nanotechwire.com/news.asp?nid=12081
c) May 19, 2011 – Nanowerk. http://www.nanowerk.com/news/newsid=21413.php

109. **Youtie, Jan.** February 19, 2013. Time to reassess the promise of nanotechnology? An analysis of research, developments and commercialization. Talk.

Invention Disclosure

1. Scio: A Nano-enhanced, Convenient, Portable Cancer Biomarker Testing Device. (2008, April).

2. Flux: A Cast with Adjustable Rigidity that Allows for Faster Recovery. (2008, April).

3. Explore: A Mobile Haptic Text to Braille Translator. (2008, April).

4. Nome: An Energy-producing Shelter for Natural Disaster Victims. (2009, April).

5. Everwell: A Device for Rural Users that Converts Air Humidity into Potable Water. (2009, April).

6. Tangent: A Solar-powered Individualized Urban Transportation. (2009, April).

16. Biosketches

New investigators for this grant year include the following Futurescape collaborators :

1. Krista Harper - associate professor, Univ. of Massachusetts, Amherst
2. Thaddeus Miller – assistant professor, Portland State University
3. Rooplai Phadke – associate professor, Macalester College

Please note that their biosketches follow in this section.

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PROFESSIONAL PREPARATION

University of California, Santa Cruz, Anthropology, MA 1994, PhD, 1999
University of California, Berkeley, Anthropology (Minor in French), BA, 1992

APPOINTMENTS

University of Massachusetts Amherst, Department of Anthropology

2010-present Associate Professor and Director of the European Field Studies Program.
2004-present Assistant Professor and Director of the European Field Studies Program (since Fall 2007),
2003-2004 Visiting Assistant Professor.
1999-2002 Postdoctoral Fellow, Political Economy Research Institute, University of Massachusetts Amherst.

Smith College, Department of Anthropology

2002-2003 Visiting Assistant Professor, Department of Anthropology, Smith College.

SELECTED PUBLICATIONS RELATED TO PROJECT

In prep. *Post-Industrial Ethnography*. Ismael Vaccaro, **Krista Harper,** and D. Seth Murray, eds. Edited book volume submitted to Berghahn Publishers.
2013 *Participatory Visual and Digital Research*. Aline Gubrium and **Krista Harper.** Walnut Creek, CA: Left Coast Press.
2012 Visual interventions and the "crises in representation" in environmental anthropology: Environmental justice in a Hungarian Romani neighborhood. *Human Organization* 71(3), Fall 2012.
2006 *Wild Capitalism: Environmental Activism and Postsocialist Political Ecology in Hungary,* East European Monographs/Columbia University Press.
2004 The Genius of the Nation versus the Gene-Tech of the Nation: Science, Identity, and GMO Debates in Hungary, *Science as Culture* 13(4): pp. 471-492. Online at http://works.bepress.com/krista_harper/10/

OTHER SELECTED PUBLICATIONS

2012 Water in A Hungarian Roma (Gypsy) Community. **Krista Harper** and Judit Bari. In *Water, Cultural Diversity and Environmental Change: Emerging Trends, Sustainable Futures.* Barbara Rose Johnston, et al., eds. Dordrecht and Jakarta: Springer/UNESCO.
2009 Environmental Justice and Roma Communities in Central and Eastern Europe (with co-authors Richard Filcak and Tamara Steger). *Environmental Policy and Governance* 19(4): pp. 251-268. Available online at http://works.bepress.com/krista_harper/2/
2005 'Wild Capitalism' and 'Ecocolonialism': A Tale of Two Rivers, *American Anthropologist* 105(2): pp. 221-33. Online at http://works.bepress.com/krista_harper/9/
2001a Introduction: The Environment as Master Narrative: Discourse and Identity in Environmental Conflicts, *Anthropological Quarterly* 74(3): pp. 101-3.
2001b Chernobyl Stories and Anthropological Shock in Hungary. *Anthropological Quarterly* 74(3): 114-123.

SYNERGISTIC ACTIVITIES

Director, European Field Studies Program, Department of Anthropology, University of Massachusetts Amherst. 2007-present. Field supervisor, 2006-2007 and 2012-2013.

Program Chair, Society for the Anthropology of Europe. American Anthropological Association. Elected by membership for 2012-2014 term.

Associate professor (joint appointment) and research committee member, Center for Public Policy and Administration, University of Massachusetts Amherst. 2004-present.

Steering committee member, Institute for Social Sciences Research (ISSR), College of Social and Behavioral Sciences, University of Massachusetts Amherst. Spring 2012-present.

Faculty affiliate, Center for Heritage and Society, University of Massachusetts Amherst. Search committee member (2009-2010).

COLLABORATORS & OTHER AFFILIATIONS

Co-authors and collaborators (past 48 months):

Ana Isabel Afonso, Department of Anthropology, New University of Lisbon
Roberta Garner, Department of Sociology, De Paul University.
Aline Gubrium, School of Public Health, University of Massachusetts Amherst.
Barbara Rose Johnston, Center for Political Ecology, University of California, Santa Cruz.
D. Seth Murray, Divisions of Interdisiplinary Studies, North Carolina State University.
Catherine Sands, Center for Public Policy and Administration, University of Massachusetts Amherst.
Andria Timmer, Department of Anthropology, Christopher Newport University.
Jacqueline Urla, Department of Anthropology, University of Massachusetts Amherst.
Ismael Vaccaro, Department of Anthropology, McGill University

Graduate advisors:

Donald Brenneis, Department of Anthropology, University of California, Santa Cruz.
S. Ravi Rajan, Department of Environmental Studies, University of California, Santa Cruz.
Anna Tsing, Department of Anthropology, University of California, Santa Cruz.

Graduate Student Advisees, Department of Anthropology, University of Massachusetts Amherst (15)

Rebecca Broedel (PhD in progress); Fabiola del Castillo (MA 2007); Jamie Fisher (MA in progress); Robin Gray (MA 2010); Kamela Heyward (PhD 2012); Theresa Hyland (MA 2008); Mackenzie Jackson (MA in progress); Dana Johnson (chair, MA 2012, PhD in progress); Mary Larkum (PhD in progress); Alanna Lynch (MA 2009); Vanessa Martinez (PhD 2014); Alin Rus (chair, PhD in progress); Ann Stewart (MA 2008); Chris Sweetapple (MA 2008, PhD in progress); Danica Willis (chair, MA 2009).

Graduate Student Committees, Other Departments and Universities (18)

Bengi Akbulut, Economics (PhD 2010); Daniel Burland, Sociology (MA 2008, PhD 2011); Josh Carreiro, Sociology (PhD in progress); Jessica Carrick-Hagenbarth, Economics (PhD in progress) Janelle Cornwall, Geography (PhD 2011); Nikolina Dobreva, Comparative Literature, (PhD 2009); Richard Filcak, Environmental Sciences and Policy, Central European University (PhD 2007); David Habashi-Boromisza, Communication (PhD 2008); Harry Konstantinidis (PhD 2012); Economics; Camille Martinez, Communication (PhD in Progress); Simona Perry, Natural Resources Conservation (PhD 2009); Emily Polk, Communication (PhD 2013); Robert Ricard, Natural Resources Conservation (PhD 2009); Andria Timmer, Anthropology, University of Iowa (PhD 2009); Shawn Trivette, Sociology (PhD 2012); Ted White, Geosciences (PhD 2013); Elsa Wiehe, International Education (PhD 2013).

Biographical Sketch

Thaddeus R. Miller, Ph.D.

Professional Preparation

Bucknell University	Environmental Studies and Economics	B.A., 2003
Columbia University	Environmental Science and Policy	M.P.A, 2004
Arizona State University	Sustainability	Ph.D., 2011

Appointments

- *Assistant Professor* (2011-present), Urban Civic Ecology and Sustainable Communities, Nohad A. Toulan School of Urban Studies and Planning, College of Urban and Public Affairs, Portland State University.
- *Affiliate* (2014-present), Consortium for Science, Policy, and Outcome (CSPO), Arizona State University.
- *Associated Faculty* (2011-present), Ecosystems Services in Urbanizing Regions (ESUR) National Science Foundation Integrative Graduate Education and Research Training (IGERT) Program, Portland State University.
- *Faculty Fellow* (2011-present), Institute for Sustainable Solutions, Portland State University.
- *NSF IGERT in Urban Ecology Senior Fellow* (2008-2010), School of Sustainability, Arizona State University.

Products

(i) Relevant products

Miller, Thaddeus R., Arnim Wiek, Daniel Sarewitz, Lennart Olsson, David Kriebel, and Derk Loorbach. 2014. The Future of Sustainability Science: A Solutions-Oriented Agenda. *Sustainability Science* 9(2): 239-246.

Miller, Thaddeus R. and Mark Neff. 2013. De-Facto Science Policy in the Making: How Scientists Shape Science Policy and Why It Matters. *Minerva* 51(3): 295-313.

Miller, Thaddeus R. 2013. Constructing Sustainability Science: Emerging Perspectives and Research Trajectories. *Sustainability Science* 8(2): 279-293.

Miller, Thaddeus R. 2011. *Constructing Sustainability: A Study of Emerging Scientific Research Trajectories*. Dissertation. Arizona State University, Tempe, Arizona.

Miller, Thaddeus R., Tischa A. Muñoz-Erickson, and Charles L. Redman. 2011. Transforming Knowledge for Sustainability: Fostering Adaptability in Academic Institutions. *International Journal for Sustainability in Higher Education* 12(2): 177-192.

(ii) Other products

Miller, Thaddeus R. and Amy Lubitow. *Forthcoming, 2014*. The Politics of Cycling Infrastructure: Contested Urban Bikeway Development in Portland, Oregon. In *Incomplete Streets*. Julian Agyeman and Steve Zavestoski, eds. Equity, Justice and the Sustainable City series. Routledge.

Lubitow, Amy and Thaddeus R. Miller. 2013. Contesting Sustainability: Bikes, Race, and Politics in Portlandia. *Environmental Justice* 6(4): 121-126.

Miller, Thaddeus R. and Ben A. Minteer, editors. 2011. The New Conservation Debate. A special issue of *Biological Conservation* 144.

Miller, Thaddeus R., Ben A. Minteer, and Leon C. Malan. 2011. The New Conservation Debate: A Descriptive and Normative Analysis of International Conservation. *Biological Conservation* 144: 948-957.

Miller, Thaddeus R., Timothy D. Baird, Caitlin M. Littlefield, Gary Kofinas, F. Stuart Chapin III and Charles L. Redman. 2008. Epistemological Pluralism: Reorganizing Interdisciplinary Research.

Ecology and Society 13 (2): 46. URL: http://www.ecologyandsociety.org/vol13/iss2/art46/.

Synergistic Activities

- *Reconstructing Sustainability Science: Knowledge and Action for a Sustainable Future*. This is a book project that explores, through discourse analysis and interviews with leading scientists in the US, UK, Canada, Netherlands, Sweden and Japan, the emerging field of sustainability science. It is under contract with Routledge: Earthscan in the Science in Society Series (edited by Steve Rayner) and will be published fall 2014.
- *Conference Co-Chair*, Conference for Sustainability IGERTs, September 2013, Portland, OR. The ESUR IGERT program at Portland State University hosted the third national Conference for Sustainability IGERTs (Miller also co-chaired the second such conference at ASU as a doctoral candidate). Funded by a supplemental grant from NSF, the conference funded IGERT students and faculty from around the country focused on sustainability to convene for three days.
- *Principal Investigator and Workshop Chair,* Linking Socio-Environmental Knowledge to Socio-Environmental Change. National Socio-Environmental Synthesis Center (SESYNC) Workshop, October 10-11, 2012, Washington, D.C. Miller convened and coordinated a two-day workshop at SESYNC with 25 scientists and scholars from through the US, Canada and Europe (and one from South Africa). Participants explored the social, political and technological barriers to linking scientific knowledge to action for sustainability.
- *Principal Investigator* (2012-present), Community Watershed Stewardship Program, Portland Bureau of Environmental Services, $59,000/year, ongoing. In partnership with the City of Portland, Miller oversees the awarding and management of watershed stewardship grants to local community groups and organizations as well as the work of three graduate research assistants.

Collaborators and Other Affiliations

Collaborators and Co-Editors: Michael M. Crow, Arizona State University; Elise Granek, Portland State University; Jack Kittinger, Stanford University; David Kriebel, University of Massachusetts, Lowell; Derk Loorbach, Erasmus University; Amy Lubitow, Portland State University; Clark Miller, Arizona State University; Tischa Muñoz-Erickson, National Forest Service; Mark Neff, Allegheny College; Lennart Olsson, Lund University; Charles L. Redman, Arizona State University; John Robinson, University of British Columbia; Daniel Sarewitz, Arizona State University; Cynthia Selin, Arizona State University; Arnim Wiek, Arizona State University

Graduate Advisors: Ben. A. Minteer, Arizona State University (Chair); Charles L. Redman, Arizona State University; Daniel Sarewitz, Arizona State University; Arnim Wiek, Arizona State University

Thesis Advisor: All PSU doctoral students: Erin Goodling (Co-advisor, Urban Studies, Portland State University), Anthony Levenda (committee member, Urban Studies), Jackyn Kohon (committee member, Urban Studies), Marissa Matsler (committee member, Urban Studies), Paul Manson (committee member, Public Affairs), Zbigniew Grabowski (committee member, Environmental Science and Management), Dick Sperry (committee member, Technology Management).

Biographical Sketch

Roopali Phadke
Associate Professor, Environmental Studies
Macalester College
1600 Grand Avenue, Saint Paul, MN 55105
Ph: 651 696 6802 Fax: 651 696 6443
Email: phadke@macalester.edu

A. Professional Preparation

Harvard University (Kennedy School)	**Science & Tech Studies**	**Postdoc 2003-2005 University of**
California, Santa Cruz	**Environmental Studies**	**PhD, 2003**
Cornell University	**Asian Studies**	**MA, 1998**
Wellesley College	**Political Science**	**BA, 1994**

B. Appointments

Associate Professor, Environmental Studies Department, Macalester College (Sept 2005 **-** present)
Teaching and research related to environmental politics, science and technology policy, international development studies.

NSF Postdoctoral Fellow, Science, Technology and Society Program, Harvard University, Kennedy School of Government (Sept 2003 – August 2005)
Under the mentorship of Dr. Sheila Jasanoff, conducted research on governance, technology policy and international development.

Researcher, Environmental Governance Project, UC Santa Cruz (Sept 2002 to June 2003)
Responsible for water sector research for this NSF funded project, including case study identification and analysis. Deliverables included book chapter, literature review and resource guide.

C. Publications

Phadke, R. 2014. “Green Energy, Public Engagement and the Politics of Scale,” in D. Kleinman and K. Moore (eds) *The Handbook of Science, Technology, and Society*. NY: Routledge Press.

Phadke, *R.* 2013. “Public Deliberation and the Geographies of Wind Justic,” *Science as Culture* Vol 22(2).

Phadke, R. 2011. “Resisting and Reconciling Big Wind: Middle Landscape Politics in the New American West”, *Antipode*. Vol 43:3.

Phadke, R. 2010. “Defending Place in the Google Earth Age”. *Ethics, Place and Environment*. Volume 13(3).

Phadke, R.2010. “Steel Forests and Smoke Stacks: The Politics of Visualization in the Cape Wind Controversy,” *Environmental Politics*. Vol 19 (1): 1-20.

D. Synergistic Activities

At Macalester College, Dr. Phadke has been an active member of the President’s Climate Commitment Committee, the Institute for Global Citizenship, the Community Banking Advisory Committee, and the Lilly Project in Vocation and Ethical Leadership. She is also a Fellow with MN2020 and the City Arts Collaboratory.

Dr. Phadke serves as a reviewer for the *Social Studies of Science*, *Society & Natural Resources*, *Science, Technology & Human Values, Ethics, Place and Environment*, *Agriculture & Human Values*, and *MIT Press.*

Dr. Phadke holds professional memberships in the Society for Social Studies of Science, the Science and Democracy Network, Association of American Geographers and the Association for Environmental Studies and Sciences. She is a member of the Board of Trustees for the International Honors Program, an affiliated program of World Learning, Inc. She has also served as a Senior Panelist for the National Science Foundation.

F. Collaborators

Collaborators and Co-Editors: Ravi Rajan (UC Santa Cruz), Sheila Jasanoff (Harvard University), Michael Watts (UC Berkeley), Clark Miller (Arizona State University), Nicole Ardoin (Stanford University), Noah Feinstein (UW Madison), Matt Turner (UW Madison), Mara Goldman (CU Boulder), Dustin Mulvaney (San Jose State), Christopher Bacon (Santa Clara), Max Boykoff (CU Boulder), Frank Laird (University of Denver), Cynthia Selin (ASU), Jason Delborne (NC State).

17. Honors and Awards

Barandiaran, Javiera. Accepted Assistant Professor position in the Global Studies program at the University of California, Santa Barbara. September 2013.

Brossard, Dominique. Elected Fellow of the American Association for the Advancement of Science (AAAS). November 2013.

Brossard, Dominique. Appointed Chair of the Department of Life Sciences Communication, University of Wisconsin-Madison. July 2013.

Brossard, Dominique. Elected Officer of the American Association for the Advancement of Science (AAAS). January 2014.

Kim, Youngjae. Received SNO Conference Student Award. Kim is a doctoral student in ASU's School of Public Affairs. September 2013.

Scheufele, Dietram A. Co-organizer of the 2nd Annual Sackler Colloquium, National Academy of Sciences. May 2013.

Scheufele, Dietram A. Received Kellett Award from the Wisconsin Alumni Research Foundation. January 2014.

Xenos, Michael A. Appointed Chair of the Department of Communication Arts, University of Wisconsin-Madison. January 2014.

Youtie, Jan and Porter, Alan. Recognized as top 45 researchers of technology and innovation management from the International Association of Management of Technology based on a quantitative analysis of articles from 2008-2012. September 2013.

20. Leverage

The Center for Nanotechnology in Society at Arizona State University (CNS-ASU) has developed over its nine years in operation relationships/partnerships with two hundred seventy-two (272) academic partnering institutions and two hundred thirty-seven (237) non-academic partnering institutions, both domestic and international. The partners are listed in Table 6, at the end of this section.

Arizona State University (ASU) provides salary support for most of the faculty who work on CNS-ASU projects. Table 5 shows the amount of financial support CNS-ASU will receive from ASU and its subawards (Georgia Institute of Technology and University of Wisconsin, Madison) between September 1, 2013 and August 31, 2014

Some successful partnerships include:

1. Consortium for Science, Policy and Outcomes (CSPO) – CNS-ASU receives support from CSPO that includes office space, desktop computers for all CNS-ASU faculty, staff, post-doctoral associates, and students, as well as access to servers, laptop computers, printers, copiers, scanners, projectors, fax machine, telephones, and a conference room with videoconferencing capability. CSPO also provides back-up for CNS-ASU staff.

2. Emerge 2013Conference: The Future of Truth – was a special event held on February 28-March 2, 2013, uniting artists, engineers, bio-scientists, social scientists, storytellers, and designers to build, draw, write, and rethink the future of the human species and the environments that we share. Together, participants created provocative and evocative stories, games, performances, and objects from which a vision of our future emerges.

   The developers of *Emerge* were Joel Garreau (Lincoln Professor of Law, Culture and Values at the Sandra Day O'Connor College of Law; Director, "The Prevail Project: Wise Governance for Challenging Futures"), Ed Finn (Assistant Professor, School of Arts, Media and Engineering, and the Director of the Center for Science and the Imagination), Daniel Sarewitz (Professor, School of Life Sciences, and Co-Director of the Consortium for Science, Policy and Outcomes), and Braden Allenby (President's Professor and Lincoln Professor of Engineering and Ethics, and School of Sustainable Engineering and the Built Environment).

3. Innovation Space -- an entrepreneurial joint venture among the Herberger Institute for Design and the Arts, the Ira A. Fulton Schools of Engineering, and the W.P. Carey School of Business at ASU. The goal of this transdisciplinary education and research lab is to teach students how to develop products that create market value, while serving real societal needs and minimizing impacts on the environment. Students learn to create products that are progressive, possible, and profitable, which also have a meaningful impact on the daily lives of ordinary people. Innovation Space utilizes two fundamental strategies for creating sustainable innovation: a model of new product development known as Integrated Innovation and the emerging field of biomimicry. CNS-ASU contributes $30,000 annually to this endeavor.

4. The Biodesign Institute – plays a critical role in advancing the research mission of ASU to conduct use-inspired research, fuse intellectual disciplines, and value entrepreneurship. Encompassing 350,000 square-feet of award-winning, state-of-the-art, LEED-certified buildings, the Biodesign Institute represents the State of Arizona's largest research infrastructure investment in bioscience-related research. ASU is the first university in the US to create an interdisciplinary research institute entirely devoted to bio-inspired innovation principles, representing a vast expansion of ASU's state-of-the-art research capacity, and also serving a core mission to engage the talents of its multidisciplinary scientists to find solutions to some of society's largest challenges. The three major areas in which the Biodesign Institute is working to make a difference are: biomedicine & health outcomes, sustainability, and security. This framework allows the Institute to address these critical global challenges by creating "use-inspired," as well as "bio-inspired" solutions.

   CNS-ASU and the Biodesign Institute offer fellowships to two graduate students. The purpose of this program is to train students to work in cross-functional teams toward real-world outcomes. Since all research has implications beyond the laboratory, CNS-ASU invests in graduate students to study some of these outcomes by paying a percentage of their salary, employee related expenses, and tuition. CNS-BDI Fellows participate in CNS-ASU sponsored curricular and co-curricular activities, including special courses, seminars, lectures, science cafes, and other opportunities, in addition to adding a "societal implications" chapter to their dissertation, the "PhD plus" component, which discusses the societal context of their research.

5. Ira A. Fulton Schools of Engineering – play a pivotal role in producing engineers and innovations to address the changing needs of society. FSE emphasizes problem-solving, innovation, entrepreneurship, multi-disciplinary interactions, societal context and connections. FSE ranks in the top 50 engineering schools in the United States, and offer 15 degree programs. It also is one of the largest engineering schools, with more than 200 faculty, more than 7,700 students, and more than $78 million in externally funded research. CNS-ASU and FSE offer fellowships to two graduate students. The purpose of this program is to train students to work in cross-functional teams toward real-world outcomes. Since all research has implications beyond the laboratory, CNS-ASU invest in graduate students to study some of these outcomes by paying a percentage of their salary, employee related expenses, and tuition. CNS-FSE Fellows participate in CNS-ASU sponsored curricular and co-curricular activities, including special courses, seminars, lectures, science cafes, and other opportunities, in addition to adding a "societal implications" chapter to their dissertation, the "PhD plus" component, which discusses the societal context of their research.

6. Barrett Honors College - Barrett students have the unique advantage of experiencing a small, intellectually, and socially vibrant environment, while having access to the vast resources of the major research university at ASU. Barrett students simultaneously benefit from being with others of the same intellectual preparation and commitment, and enjoy the advantages of a university environment actively engaged in exploring all areas of human interest and concern. All students who enter ASU through Barrett, The Honors College, also enroll in a disciplinary college, and pursue one or more of the 275+ available disciplinary majors and concentrations. Their education is the result of the integration of all colleges at ASU, including Barrett, that cultivate the talents and interests of Barrett students and endeavor to meet their changing needs as they develop academically and socially. Barrett students, hired as CNS-ASU student interns, participate in the CNS-ASU poster session at the

All Hands Meeting and the site visit from the National Science Foundation. Barrett students who have worked with CNS-ASU have gone on to win Fulbright fellowships and Presidential Management Fellowships.

8. Center for Science and the Imagination – brings writers, artists, and other creative thinkers into collaboration with scientists, engineers, and technologists to reignite humanity's grand ambitions for innovation and discovery. CNS-ASU partnered with CSI to present a lecture on human enhancement and the singularity in the reporting year. CSI is also working with CSPO and CNS-ASU on the Frankenstein Bicentennial Project.

9. University of Notre Dame – and CNS-ASU will host a collaborative research workshop on the "Anticipatory Governance of Complex Engineered Nanomaterials," including advanced generation nanosystems. The workshop will be a joint effort of the Centers for Environmental Implications of Nanotechnology, the Centers for Nanotechnology in Society, the Center for Nano Science and Technology, and other relevant groups. The workshop will generate new knowledge about the prospective governance challenges of CENMs, and will take full advantage of the dissemination abilities of the centers and/or groups involved.

10. Nanoscience and Emerging Technologies in Society: Sharing Research and Learning Tools (NETS) project – investigates digital resources to advance the collection, dissemination, and preservation of this body of research, addressing the challenge of marshaling resources, academic collaborators, appropriately skilled data managers, and digital repository services for large-scale, multi-institutional and disciplinary research projects. The central activity of this project involves a workshop that will gather key researchers in the field and digital librarians together to plan the development of a disciplinary repository of data, curricula, and methodological tools. Partners include CNS-ASU, CNS-UCSB, University of Michigan's Inter-University Consortium for Political and Social Research, and the University of Massachusetts, Amherst Libraries.

TABLE 5: Other Support
(NSF Grant #093791)

Designation	Year 1 9/15/10-9/14/11	Year 2 9/15/11-9/14/12	Year 3 9/15/12-9/14/13	Year 4 9/15/13-9/14/14	Year 5 9/15/14-9/14/15
Other NSF	$0	$0	$172,500	$0	$0
Other Federal	$0	$0	$0	$0	$0
State	$0	$0	$0	$0	$0
Industry	$0	$0	$0	$0	$0
University	$1,025,128	$1,723,232	$2,640,847	$2,775,665	$0
Foreign	$0	$0	$0	$0	$0
Other Total	$1,025,128	$1,723,232	$2,813,347	$2,775,665	$0

Table 6: Partnering Institutions (cumulative)

Name of Institution	Receives Financial Support from Center	Contributes financial support to the center	Minority Servicing Institution Partner	Female Serving Institution Partner	National Lab/other govt. Partner	Industry Partner	Museum Partner	International Partner	Other
I.a. Academic Partnering Institutions (ASU)									
Applied Learning Technologies Institute	x								
Arizona Institute for Nano-Electronics (AINE)									x
Arizona Technology Enterprises (AzTE)									x
Axon Technologies									x
Barrett, The Honors College									x
Biodesign Institute	x	x							
Center for Biology & Society									x
CRESMET									x
Center for the Study of Religion and Conflict									x
Center for Law, Science and Innovation	x								
Center for Science and the Imagination									x
Center for Solid State Electronics Research	x								
Center for Study of Institutional Diversity	x								
College of Liberal Arts and Sciences		x							
College of Public Programs	x								
College of Technology & Innovation	x								
Complex Adaptive Systems Initiative (CASI)									x
Consortium for Science, Policy and Outcomes		x							
Decision Theater for a Desert City									x
Foundation, ASU									x
Global Institute of Sustainability									x
Graduate College	x								
Hayden Library									x
Health Services									x
Herberger Institute for Design and the Arts	x								
Hispanic Research Center			x						
Institute for Human Origin									x
Ira A. Fulton Schools of Engineering	x	x							
Learning Sciences Institute									x
LightWorks	x								
Mary Lou Fulton School of Education	x								
New Interdisciplinary Arts & Sciences									x
Office of China Intitatives and Strategy									x
Office of Knowledge and Enterprise Development (OKED)		x							
Office of Public Affairs									x
Office of the President		x							x
Office of Vice President and Provost									x
Office of University Initiatives									x
Occupational Health and Safety									x
Phoenix Urban Research Laboratory	x								
SOLS-Responsible Conduct of Research Program	x								x
Sandra Day O'Connor School of Law	x								
School of Earth & Space Exploration									x
School of Government, Politics, and Global Studies	x	x							
School of Human Evolution and Social Change	x	x							
School of International Languages and Cultures	x								
School of Letters and Sciences	x								
School of Life Sciences	x								
School of Mathematical and Statistical Sciences									x
School of Philosophical, Historical, and Religious Studies									x
School of Social Transformation									x
School of Sustainability	x								
Science Policy Assessment and Research on Climate (SPARC)									x
Stardust Center	x								
Technology Based Learning Research							x		x
Transformative Healthcare Networks									x
University Art Museum									x
University Public Schools									x
W.P. Carey School of Business	x								
Walter Cronkite School of Journalism and Mass Communication									x
I.b. Academic Partnering Institutions									
Aarhus University, Denmark								x	
Ansal Institute of Denmark								x	
Antwerp University								x	
Austrian Academy of Science								x	
Baylor College of Medicine									x
Beijing Institute of Technology, China	x							x	
Bioscience High School									x
Boise State University									x
Bowling Green State University									x
Brown University	x								
California State University, Sacramento									x
Cardiff University	x								
Carnegie Mellon University								x	
Case Western Reserve University									x

Table 6: Partnering Institutions (cumulative)

		Name of Institution	Receives Financial Support from Center	Contributes financial support to the center	Minority Servicing Institution Partner	Female Serving Institution Partner	National Lab/other govt. Partner	Industry Partner	Museum Partner	International Partner	Other
		Chandler Gilbert Community College									x
		Chinese Academy of Sciences									
		Claremont Graduate University									x
		Clark University									x
		Collins College									x
		Colorado School of Mines	x								
		Columbia College Chicago									x
		Columbia University									x
		Concordia University									x
		Copenhagen Business School, Denmark	x							x	
		Corinthian College									x
		Cornell University									x
		Dalian University of Technology, China	x							x	
		Delft Technical University, the Netherlands								x	
		DeVry University									x
		Dublin City University								x	
		Durham University, United Kingdom								x	
		Ecoles des Mines, France								x	
		ETH Zurich								x	
		Eugene Lang College the New School for Liberal Arts									x
		Ewha Women's University				x				x	
		Federal University of Parana, Brazil	x							x	
		Federal University Santa Catarina, Brazil	x							x	
		Flemish Institute of Science & Technology								x	
		Florida International University									x
		George Mason University									x
		George Washington University									x
		Georgetown University									x
		Georgia Institute of Technology	x								
		Glendale Community College									x
		Grenoble Institute of Technology	x							x	
		Grove City College									x
		Harvard University									x
		Howard University									x
		Illinois Institute of Technology									x
		Indiana University	x								
		Institute of International Sociology of Gorizia	x							x	
		Institut d'Etudes Politiques de Grenoble, France	x							x	
		Iowa State University									x
		James Martin Institute for Science and Civilization, Oxford, UK								x	
		Johns Hopkins University									x
		Karlsruhe Institute of Technology, Germany	x							x	
		Keele University									x
		Korea Institute of Science and Technology, Seoul, Korea								x	
		Lancaster University								x	
		Leeds University Business School, UK	x							x	
		Lehigh University									x
		Litchfield Elementary School District									x
		Long Island University									x
		Macalester College									x
		Manchester Business School	x							x	
		Maricopa Community Colleges									x
		McGill University									x
		Mesa Biotech Academy									x
		Mesa Community College									x
		Mesa High School									x
		Michigan State University									x
		MIT SENSEable City Lab									x
		Montana State University									x
		Nagoya University, Japan	x							x	
		National Academy of the Sciences									x
		National University of Singapore & Asia								x	
		New York University	x								
		North Carolina State University	x								
		Northeastern University									x
		Northern Alberta Institute of Technology									x
		Northwestern University									x
		Norwegian University of Science & Technology, Norway								x	
		NSEC/CNS-University of California, Santa Barbara (UCSB)									x
		Ohio State University									
		Osaka University, Japan								x	
		Pennsylvania State University									x
		Plymouth University									x
		Portland State University									x
		Purdue University	x								
		Queens University								x	
		Radboud University								x	
		Rensselaer Polytechnic Institute	x								
		Rhode Island School of Design	x								x

Table 6: Partnering Institutions (cumulative)

Name of Institution	Receives Financial Support from Center	Contributes financial support to the center	Minority Servicing Institution Partner	Female Serving Institution Partner	National Lab/other govt. Partner	Industry Partner	Museum Partner	International Partner	Other
Rice University									x
Rice University/ICON		x							
Rio Salado College									x
Rochester Institute of Technology									x
Roger L. Putnam Vocational Technical Academy									x
Rutgers, The State University of New Jersey	x								
RWTH Aachen University								x	
Said Business School, Oxford								x	
Sapieza University of Rome									x
Scottsdale Community College									x
Simon Fraser University, British Columbia								x	
S.I.W.S. N.R. Swamy College, India	x							x	
South Mountain Community College									x
Stanford University	x								x
State University of Campinas									x
Stony Brook University									x
Tamkang University								x	
Technical University of Delft								x	
Technical University of Denmark								x	
Technical University of Darmstadt								x	
Tennessee State University									x
Texas State University, San Marcos	x								
The Center for International Development, Harvard University									x
Tokyo University	x							x	
Tsinghua University, China								x	x
UCLA/Harvard/NBER: Collaborative Research; Personnel Exchanges									x
UMC St. Radboud									x
Unicamp University, Brazil								x	
University de Zacatecas, Mexico	x							x	
Universidad del Pais Vasco, Spain								x	
Universita Ca' Foscari Venezia								x	
University College London									x
University at Albany									x
University of Alberta								x	
University of Amsterdam								x	
University of Antwerp, Belgium	x							x	
University of Arizona								x	
University of Athens								x	
University of Basel								x	x
University of Basque Country									x
University of Bergen, Norway	x							x	
University of Bielefeld, Germany	x							x	
University of British Columbia								x	
University of Calgary, Canada	x							x	
University of California, Berkeley	x								
University of California, Davis									x
University of California, Irvine									x
University of California, Los Angeles									x
University of California, San Diego	x								
University of California, Santa Barbara									x
University of Cape Town									x
University of Central Florida									x
University of Chicago									x
University of Colorado, Boulder	x								
University of Colorado, Denver	x								
University of Copenhagen								x	x
University of Denver									x
University of Edinburgh	x							x	
University of Exeter, United Kingdom								x	x
University of Florida									x
University of Geneva								x	
University of Georgia	x								
University of Gothenburg, Sweden								x	
University of Groningen, the Netherlands								x	
University of Illinois, Chicago									x
University of Illinois, Springfield									x
University of Illinois, Urbana-Champaign									x
University of Iowa									x
University of Jiangsu, China								x	
University of Lausanne, Switzerland								x	
University of Leeds	x							x	
University of Liege, Belgium	x							x	
University of Manchester, United Kingdom	x								
University of Maryland									x
University of Massachusetts, Amherst									x
University of Melborne, Australia								x	
University of Michigan									x
University of Minnesota									x
University of Montana									x

Table 6: Partnering Institutions (cumulative)

		Name of Institution	Receives Financial Support from Center	Contributes financial support to the center	Minority Servicing Institution Partner	Female Serving Institution Partner	National Lab/other govt. Partner	Industry Partner	Museum Partner	International Partner	Other
		University of Nebraska, Lincoln	x								
		University of Nevada, Las Vegas									x
		University of New Hampshire	x								
		University of New South Wales, Australia								x	
		University of North Carolina, Chapel Hill									x
		University of North Carolina, Charlotte									x
		University of North Texas									x
		University of Notre Dame									x
		University of Nottingham								x	
		University of Oslo								x	
		University of Oxford								x	
		University of Padua								x	
		University of Seville, Spain	x							x	
		University of South Carolina									x
		University of South Florida									x
		University of Southern California									x
		University of Southern Indiana									x
		University of Sussex, United Kingdom								x	
		University of Tennessee, Knoxville									x
		University of Texas, Austin									x
		University of Trieste, Italy								x	
		University of Twente, the Netherlands	x							x	
		University of Turku									x
		University of Utah									x
		University of Victoria	x							x	
		University of Vienna								x	
		University of Virginia									x
		University of Washington									x
		University of Waterloo								x	
		University of Wisconsin, Madison	x								
		UT-Battelle									x
		Utrecht University								x	
		Vanderbilt University									x
		Villanova University									x
		Virginia Tech University									x
		VU University of Amsterdam								x	
		Washington University, Saint Louis									x
		West Chester University of Pennsylvania									x
		Western Michigan University									x
		Yale University									x
		York University								x	
272	**Total Number Academic Partners**										
II. Non-academic Partnering Institutions											
		Agilent Technologies	x								
		Airplayn									x
		Alberta Centre for Advanced Micro Nano Technology Products								x	
		Alberta Innovates Technology Futures								x	
		ALD Nano Solutions						x			
		Alsek Research									x
		American Association for the Advancement of Science (AAAS)		x							x
		American Bar Foundation									x
		Apriva ISS									x
		Arizona BioIndustry Organization						x			
		Arizona Commerce Authority						x			
		Arizona Corporation Commission						x			
		Arizona Department of Education						x			
		Arizona Department of Health Services						x			
		Arizona Nanotechnology Cluster						x			
		Arizona Public Service (APS)						x			x
		Arizona Research Institute for Solar Energy						x			x
		Arizona Science Center							x		
		Arizona Technology Council						x			
		Army Military Command									x
		Australian Government						x		x	
		Bank of America									x
		Bassetti Foundation								x	x
		BioIndustry Organization of Southern Arizona						x			
		Boudreaux and Associates									x
		BrasEq						x		x	
		Brilliant Concepts, LLC.									x
		British Embassy					x			x	
		Buckeye Express									x
		Burton Barr Central Library									x
		Cambridge Public Health Department	x								
		Carnegie Mellon									x
		CB Richard Ellis									x

Table 6: Partnering Institutions (cumulative)

Name of Institution	Receives Financial Support from Center	Contributes financial support to the center	Minority Servicing Institution Partner	Female Serving Institution Partner	National Lab/other govt. Partner	Industry Partner	Museum Partner	International Partner	Other
CEA-Saclay									x
Cell Publishing		x						x	
Center for Business Models in Health Care									x
Center for Naval Analysis					x				
Center for Responsible Nanotechnology									x
Changeist, LLC.									x
Chemical Heritage Foundation							x		
Children's Museum of Phoenix							x		
City of Apache Junction									x
City of Edmonton								x	
City of Phoenix									x
City of Scottsdale									x
Complex Global Risks									x
Corgan Associates									x
Council of Scientific and Industrial Research									x
Danish Board of Technology								x	
David Crowley Gallery									x
Decker Yeadon LLC									x
Denise Meridith Consultants, Inc.									x
Department of Energy (DOE)						x			
Department of the Treasury						x			
Department of Transporation						x			
Depave									x
Describe, LLC.									x
Desert Botanical Garden							x		
Digital Thinking Network									x
Downtown Phoenix Journal									x
Ecological Society of America									x
EKLATEK Engineering									x
E.L. Smith Water Treatment Plant					x				
Emerging Leaders in Science & Society (ELISS)									x
Engineering & Physical Sciences Research Council (EPSRC)									x
Environmental Protection Agency (EPA)						x			
Equus Development Corporation						x			
Eureka									x
European Commission								x	
Exploratorium, San Francisco							x		
Federal Aviation Administration Office of Environment & Energy						x			
FBI Weapons of Mass Destruction					x				
Food and Drug Administration (FDA)					x				
Foundation for Genomics and Population Health								x	
Gallagher and Kennedy									x
General Dynamics						x			
Genøk Centre for Biosafety								x	x
Genome British Columbia								x	x
German Parliament								x	
Global Business Network						x			
Gould Evans									x
Gordon Research Conferences (GRC)		x							
Greenwall Foundation		x							
Ground Work Portland					x				
Hafen City University									x
HDR Architecture									
Heatsync Labs					x				
Heliae									x
Home Depot						x			
Iconic Architecture									x
Ikologi								x	
INSERM									x
Institute for Agriculture and Trade Policy									x
Institute for Ecological Economy Research, Germany								x	
Institute for the Future	x								
Institute of Technical Assessment & Systems Analysis									x
Intel						x			
Intelligent Information Services Corporation (IISC)						x			
International Nanotechnology in Society Network (INSN)								x	
International Research Center								x	
Ira Domsky Environmental									x
Italian National Research Council, Turin, Italy								x	
ITel									x
Ivy Consulting, Inc.									x
Jennings, Strouss and Salmon PLC		x							
Kaiser Permanente									x
Kolbe Corp.									x
Kristine Wilcox Consulting									x
Las Vegas-Clark County Library District									x
Lasertel, Inc.									x
Lawrence Livermore Lab					x				
Leathers Milligan & Associates									x

Table 6: Partnering Institutions (cumulative)

Name of Institution	Receives Financial Support from Center	Contributes financial support to the center	Minority Servicing Institution Partner	Female Serving Institution Partner	National Lab/other govt. Partner	Industry Partner	Museum Partner	International Partner	Other
Loka Institute									x
London Science Museum							x	x	
Luxe Ventures						x			
Lyman and Merrie Wood Museum of Springfield History							x		
Mabelson Law Group									x
Mapping & Planning Support (M.A.P.S) Alberta Capital Region								x	
Max Chandler Robot Art									x
Mayo Clinic-Scottsdale						x			
Meridian Institute	x								
Metacurrency Project									x
Microchip						x			
MJS Designs, Inc.									x
Modern Insights									x
Museum of Life & Science, North Carolina							x		
Museum of Science, Boston							x		
Nano-Alberta								x	
Nanoscale Informal Science Education Network (NISE Net)							x		
National Academy of Engineeering	x								
National Advisory Committee on Aeronautics (NASA)					x				
National Business Museum							x		
National Geographic Society									x
National Institute of Standards and Technology (NIST)									x
National Insitutes of Health (NIH)									x
National Nanomanufacturing Network (NNN)									x
National Nanotechnology Coordinating Office									x
National Nanotechnology Infrastructure Network									x
National Research Council									x
National Research Council of Canada								x	
National Science Foundation					x				
Nature.com									x
Nature Publishing Group		x						x	
New Haven Independent									x
Norweigian Institute					x			x	
Nothing but NET									x
NRG Energy, Inc.						x			
Nuclear Waste Review Board					x				
Office of Naval Research					x				
Oregon Museum of Science & Industry							x		x
PACeHR									x
Penman PR	x								
Pennsylvania Bio Nano Systems	x								
Phoenix Public Library									x
Phoenix Rising									x
Phoenix Spokes People									x
Phoenix Zoo									x
Physician Services Group									x
PING Inc.						x			
Pioneer Valley Transit Authority						x			
Planetary ONE	x								x
Portland Bureau of Environmental Services					x				
Practical Action									x
Presidential Commission for the Study of Bioethical Issues					x				
Quantiam Technologies Inc.								x	
QuantTera									x
Rathenau Institute								x	
RCI Surveys, Inc.									x
Research Center Berlin								x	
Research Council of Norway	x							x	x
Research Councils U.K. (RCUK) in the U.S.									x
Re/Max Fine Propoerties									x
Research Media Ltd.									x
Richard + Bauer Architecture									x
Rockefeller Foundation		x							
Rose Community Development Corporation						x			
Rutgers and Posch									x
Ryley Carlock & Applewhite	x								
Salt River Project						x			
Sandia National Laboratory					x				
Savage Film									x
Science & Technology Policy Institute	x								
Sciencecener, New York						x			
Science Foundation of Arizona									x
Science Museum of Minnesota						x			x
SciStarter									x
SciTech Strategies, Inc.									x
Scottsdale League for the Arts									x
Search Technology									x
Semi-Conductor Research Corporation	x								
SETI Institute									x

Table 6: Partnering Institutions (cumulative)

		Name of Institution	Receives Financial Support from Center	Contributes financial support to the center	Minority Servicing Institution Partner	Female Serving Institution Partner	National Lab/other govt. Partner	Industry Partner	Museum Partner	International Partner	Other
		Shannon and Wilson, Inc.									x
		SmithGroup									x
		Snell and Wilmer Law									x
		Social Sciences and Humanities Research Council of Canada								x	
		Sokolov, Sokolov, Burgess Solutions (SSB)									x
		South of Market EcoDistrict									x
		Spirit of the Senses Salon									x
		Springer Publishing		x							
		SRI Institute	x								
		Startup Edmonton								x	
		Strategic Advantage, Inc.									x
		Sundt Construction, Inc.									x
		Synthetic Biology Engineering Research Center (SynBERC)					x				
		SySTEM Schools, Inc.									x
		Targeted Genetics Corporation (TGen)									x
		Teach America									x
		TEC Edmonton								x	
		Televerde									x
		Telus World of Science									
		Tempe Festival of the Arts									x
		Testani Design Trouple, Inc.									x
		The Eluminati, LLC									x
		The Embryo Project									x
		The Energy and Resources Institute (TERI)								x	
		The Foresight Institute									x
		The Galaxy Organization									x
		The Geek Group of Western Massachusetts									x
		The Rockefeller Foundation	x								
		The Royal Society									x
		The Washington Post									x
		Translational Genomics Research Institute (TGEN)									x
		TraskBritt Intellectual									x
		TRIMET Transportation						x			
		Underwood Bros., Inc.									x
		Unicorn Media, Inc.									x
		U.S. Government Accountability Office (U.S. GAO)					x				
		U.S. Green Building Council					x				
		U.S. Department of Agriculture									x
		U.S. Department of Homeland Security					x				
		U.S. Department of Transportation					x				
		U.S. DOE/Center for Integrated Nanotechnology (CINT)					x				
		Venezuelan Institute for Scientific Research									x
		Western Massachusetts Electric Company						x			
		Will Bruder & Partners Ltd.									x
		Winnipeg Art Gallery									x
		Woodrow Wilson International Center for Scholars									x
237	**Total Number Non-academic Partners:**										

21. Current and Pending Support

Following are the Current and Pending Support documents for the PI and all thrust leaders:

1. Ira Bennett – Assistant Director, Education
2. Elizabeth A. Corley – co-PI; RTTA 2 co-team leader
3. Susan Cozzens – TRC 1 co-team leader
4. Erik Fisher – RTTA 4 team leader; Associate Director, Integration
5. David H. Guston – PI and Center Director
6. Jose Lobo – RTTA 1 co-team leader
7. Clark Miller – co-PI; Center Associate Director
8. Dietram Scheufele – co-PI; RTTA 2 co-team leader
9. Cynthia Selin – RTTA 3 co-team leader; Associate Director, Anticipation
10. Philip Shapira – RTTA 1 co-team leader
11. Sander E. van der Leeuw – TRC 2 co-team leader
12. Jameson M. Wetmore – TRC 1 co-team leader; Associate Director, Engagement
13. Arnim Wiek – TRC 2 co-team leader
14. Jan Youtie – co-PI; RTTA 1 co-team leader

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Ira Bennett**

Other agencies (including NSF) to which this proposal has been/will be submitted

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Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Participatory Technology Assessment of NASA's Asteroid Initiative

Source of Support: **National Aeronautics and Space Administration**

Total Award Amount: **$196,908** Total Award Period Covered: **4/1/14 – 3/31/15**

Location of Project: **Arizona State University**

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

ASU Site: National Nanotechnology Infrastructure Network – SEI Activities Supplement

Source of Support: **National Science Foundation (sub to Cornell University)**

Total Award Amount: **$65,000** Total Award Period Covered: **7/1/13 – 6/30/14**

Location of Project: **Arizona State University**

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

NSEC: Center for Nanotechnology in Society at Arizona State University (CNS-ASU) Renewal

Source of Support: **National Science Foundation**

Total Award Amount: **$6,500,000** Total Award Period Covered: **10/1/10 – 9/30/15**

Location of Project: **Arizona State University**

Person-Months Per Year Committed to the Project. Cal: Acad: 4.5 Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **NCCLCs: Material Life Cycle of Nanomaterials (LCNano)**

Source of Support: **Environmental Protection Agency**

Total Award Amount: **$5,000,000** Total Award Period Covered: **12/1/2013 – 11/30/2018**

Location of Project: **Arizona State University**

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: .5

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*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

NSF Form 1239 (10/99) USE ADDITIONAL SHEETS AS NECESSARY

55

Current and Pending Support
(See GPG Section II.D.8 for guidance on information to include on this form.)
The following information should be provided for each investigator and other senior per-

Investigator: Elizabeth A. Corley

Other agencies (including NSF) to which this proposal has been/will be submitted.
National Science Foundation

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:
Center for Nanotechnology in Society – ASU (Role: Co-Principal Investigator)

Source of Support: National Science Foundation
Total Award Amount: $12,700,000 Total Award Period Covered: October 2005 – September 2015
Location of Project: Arizona State University
Person-Months Per Year Committed to the Cal: 0 Acad: 0 Sumr: 0

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:
Qualitative and Quantitative Assessments of Outcomes from and Impacts of CNS-ASU (Role: Co-Principal Investigator)

Source of Support: National Science Foundation
Total Award Amount: $172,500 Total Award Period Covered: October 2012 – May 2014
Location of Project: Arizona State University
Person-Months Per Year Committed to the Cal: 0 Acad: 0 Sumr: 0

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Cal: Acad: Sumr:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

NSF Form 1239 (10/99) USE ADDITIONAL SHEETS AS NECESSARY

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Cozzens, Susan

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

COLLABORATIVE RESEARCH: WOMEN IN SCIENCE AND TECHNOLOGY POLICY

SES-1152980

Source of Support: National Science Foundation

Total Award Amount: $179,487 Total Award Period Covered: 5/15/12 – 4/30/15

Location of Project: GTRC Atlanta, GA

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: .05

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

CENTER FOR NANOTECHNOLOGY IN SOCIETY (CNS-ASU) AT GEORGIA TECH

SES-0937591

Source of Support: Arizona State University

Total Award Amount: $957,095 Total Award Period Covered: 10/1/10 – 8/14/14

Location of Project: GTRC Atlanta, GA

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: .05

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

NSF Form 1239 (10/99) USE ADDITIONAL SHEETS AS NECESSARY

55

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **David Guston**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: The Frankenstein Bicentennial Project (this proposal)
Source of Support: National Science Foundation
Total Award Amount: $49,999 Total Award Period Covered:
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. 0.50 Cal: 0.00 Acad: 0.00 Sumr: 0.00

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Workshop on Anticipatory Governance of Engineered Nanomaterials (this proposal)
Source of Support: National Science Foundation
Total Award Amount: $34,250 Total Award Period Covered: July 1, 2012 – June 30, 2014
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. 0.00 Cal: 0.00 Acad: 0.00 Sumr: 0.00

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Virtual Institute for Responsible Innovation
Source of Support: National Science Foundation
Total Award Amount: $499,725 Total Award Period Covered: August 1, 2012 – July 31, 2015
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. 0.00 Cal: 0.00 Acad: 0.00 Sumr: 0.00

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: IGERT: Solar Utilization Network (SUN)
Source of Support: National Science Foundation
Total Award Amount: $3,498,193 Total Award Period Covered: July 2012 – June 2017
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. 0.00 Cal: 0.00 Acad: 0.00 Sumr: 0.50

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: To think, to write, to publish Part 2: Forging a working bond between next generation science communicators and next generation of science and technology policy leaders
Source of Support: National Science Foundation
Total Award Amount: $249,949 Total Award Period Covered: January 2012 – June 2013
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. 0.00 Cal: 0.00 Acad: 0.00 Sumr: 0.00

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: QESST: ERC for Quantum Energy and Sustainable Solar Technologies
Source of Support: National Science Foundation
Total Award Amount: $18.5million Total Award Period Covered: March 1, 2011 – February 29, 2016
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. 0.00 Cal: 0.00 Acad: 0.00 Sumr: 0.00

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: NSEC: Center for Nanotechnology and Society at ASU Renewal
Source of Support: National Science Foundation
Total Award Amount: $6,500,000 Total Award Period Covered: October 1, 2010 – September 30, 2015
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: Acad:0 Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Socio-Technical Integration Research (STIR)
Source of Support: National Science Foundation
Total Award Amount: $540,000 Total Award Period Covered: April 1, 2009 – March 30, 2012
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: .25 yr 1

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Participatory Technology Assessment of NASA's Asteroid Initiative
Source of Support: NASA
Total Award Amount: $196,908 Total Award Period Covered: April 1, 2014 – March 31, 2015
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Cross-training in Biomedical Research: Business, Policy, Law, and Communications
Source of Support: NIH
Total Award Amount: $1,931,250 Total Award Period Covered: September 1, 2014 – August 31, 2019
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Jose Lobo

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: X Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

NSEC: Center for Nanotechnology in Society at Arizona State University

Source of Support: National Science Foundation

Total Award Amount: $6,500,000 Total Award Period Covered: September 2010-August 2015

Location of Project: Arizona State University

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: 1.0

Support: X Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Dynamics of Global Informal Settlements

Source of Support: Bill & Melinda Gates Foundation

Total Award Amount: $19,038 Total Award Period Covered: January 2013 – January 2015

Location of Project: Santa Fe Institute

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: 2.0

Support: X Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Forecasting Progress in Solar Energy Technologies

Source of Support: U.S. Department of Energy

Total Award Amount: $61,340 Total Award Period Covered: April1, 2013 – Aril1, 2016

Location of Project: UNC-Charlotte

Person-Months Per Year Committed to the Project. Cal: Acad: 2.0 Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

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Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Clark A. Miller**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

The Socio-Economics of Energy Transitions: Research and Training Initiative (this proposal)

Source of Support: National Science Foundation
Total Award Amount: $499,086 Total Award Period Covered: 10/1/2014 – 9/30/2017
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: Acad: 0 Sumr: 0.5

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Quantum Energy and Sustainable Solar Technologies (QUESST) Engineering Research Center

Source of Support: National Science Foundation
Total Award Amount: $18,500,000 Total Award Period Covered: 8/15/11-8/14/16
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: Acad: 0.5 Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

RCN-SEES: Sustainable Energy Systems

Source of Support: National Science Foundation
Total Award Amount: $750,000 Total Award Period Covered: 9/1/11-8/31/16
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: Acad: 0.25 Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

IGERT: Person-centered Technologies and Practices for Individuals with Disabilities

Source of Support: NSF
Total Award Amount: $3,000,000 Total Award Period Covered: 7/1/11-6/30/16
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: Acad: 1.0 Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Knowledge Systems Analysis for Environmental Decision Making: Energy Development in the Four Corners Region of the American Southwest, 1960-2010

Source of Support: National Science Foundation
Total Award Amount: $120,000 Total Award Period Covered: 4/15/12 – 3/31/2015
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: Acad: 0 Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Center for Nanotechnology in Society: Renewal

Source of Support: National Science Foundation
Total Award Amount: $6,500,000 Total Award Period Covered: 10/1/10-9/30/15
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: Acad: 0 Sumr:

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Deliberative Approaches to Evidence-based Decision-making in Personalized Medicine Based on Whole Systems Assessment Technologies

Source of Support: Department of Health and Human Services

Total Award Amount: $400,000 Total Award Period Covered: 7/1/2014 – 6/30/2016

Location of Project: Arizona State University

Person-Months Per Year Committed to the Project. Cal: Acad: 0 Sumr: 1

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

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Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Dietram Scheufele

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: x Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: NIRT: Center for Nanotechnology in Society at Arizona State University

PI: David Guston

Source of Support: NSF

Total Award Amount: $6.5mio. Total Award Period Covered: 2010-15

Location of Project: ASU with UW-Madison subcontract

Person-Months Per Year Committed to the Project. Cal: 1.5 Acad: 0 Sumr: 0

Support: x Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Developing a user experience for the next generation nuclear fuel cycle simulator

PI: Paul Wilson

Source of Support: Department of Energy

Total Award Amount: $1.2mio Total Award Period Covered: 2011-14

Location of Project: UW-Madison

Person-Months Per Year Committed to the Project. Cal: 0.25 Acad: 0 Sumr: 0

Support: x Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: UW Nanoscale Science and Engineering Center on Templated Synthesis and Assembly at the Nanoscale I

PI: Padma Gopalan

Source of Support: NSF

Total Award Amount: $14.7mio Total Award Period Covered: 2009-14

Location of Project: UW-Madison

Person-Months Per Year Committed to the Project. Cal: 0.25 Acad: 0 Sumr: 0

Support: x Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Subcontract to “Nanoscale Informal Science Education Network”

PIs: Larry Bell, Paul Martin & Robert J. Semper

Source of Support: NSF

Total Award Amount: $159,989 Total Award Period Covered: 2013-15

Location of Project: UW-Madison

Person-Months Per Year Committed to the Project. Cal: 0.25 Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

NSF Form 1239 (10/99) USE ADDITIONAL SHEETS AS NECESSARY

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Annual Report for Award #0937591 **Current and Pending Support** September 1, 2013 - August 31, 2014

(See GPG Section II.D.8 for guidance on information to include on this form)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Cynthia Selin

Other agencies (including NSF) to which this proposal has been/will be submitted:

Support: ☐ Current ☑ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Democratizing Science: The Role of Informal Civic Learning in Shaping Sociotechnical Futures
This Proposal? ☒
Source of Support: National Science Foundation
Total Award Amount: Total Award Period Covered: -
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: ☑ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: NSEC: Center for Nanotechnology in Society at Arizona State University (renewal)
This Proposal? ☐
Source of Support: National Science Foundation
Total Award Amount: $ 6,500,000.00 Total Award Period Covered: 10/1/10 - 9/30/15
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project: Cal: Acad: 4.50 Sumr:

Support: ☑ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: NUE: Cross-disciplinary Education in Social & Ethical Aspects of Nanotechnology
This Proposal? ☐
Source of Support: National Science Foundation
Total Award Amount: $ 199,157.00 Total Award Period Covered: 11/1/13 - 10/31/15
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:
This Proposal? ☐
Source of Support:
Total Award Amount: Total Award Period Covered: -
Location of Project:
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:
This Proposal? ☐
Source of Support:
Total Award Amount: Total Award Period Covered: -
Location of Project:
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

NSF Form 1239 (10/99)

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USE ADDITIONAL SHEETS AS NECESSARY

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Philip Shapira

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal NSEC/Center for Nanotechnology in Society at Arizona State University (Georgia Tech sub-contract)

Source of Support: National Science Foundation

Total Award Amount: $1,139,173 Total Award Period Covered: October 1, 2010 – September 30, 2015

Location of Project: Georgia Institute of Technology, Atlanta (sub-contract through Arizona State University)

Person-Months Per Year Committed to the Project. Cal: 1 Acad: Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Georgia Manufacturing Survey

Source of Support: Enterprise Innovation Institute

Total Award Amount: c $10,000 Total Award Period Covered: 8/1/13 – 7/31/14

Location of Project: Georgia Institute of Technology, Atlanta

Person-Months Per Year Committed to the Project. Cal: 0.8 Acad: Sumr:

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

International University Research Ventures: Implications for US Economic Competitiveness and National Security

Source of Support: Minerva Research Initiative (DoD)

Total Award Amount: $945,000 Total Award Period Covered: 9/2014 – 8/2017

Location of Project: Georgia Institute of Technology, Atlanta

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: 1

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Total Award Amount: Total Award Period Covered:

Location of Project: Georgia Tech, Atlanta

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

NSF Form 1239 (10/99) USE ADDITIONAL SHEETS AS NECESSARY

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Current and Pending Support

(See GPG Section II.C.2.h for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: van der Leeuw, Sander | Other agencies(including NSF) to which this proposal has been/will be submitted

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Urbanization and Global Environmental Change International Project Office

Source of Support: NSF-ENG-BCS
Total Award Amount: $750,000.00 Total Award Period Covered: 9/1/2012 - 2/29/2016
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Urbanization and Global Environmental Changes (UGEC) Project

Source of Support: NSF-SBE
Total Award Amount: $585,000.00 Total Award Period Covered: 10/1/2009 - 9/30/2014
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Sustaining Digital Antiquity - Preservation and Access for Archaeological Information

Source of Support: A.W. MELLON FDN
Total Award Amount: $1,200,000.00 Total Award Period Covered: 3/1/2012 - 2/28/2015
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: NSEC/Center for Nanotechnology at ASU

Source of Support: NSF-SES
Total Award Amount: $6,525,890.00 Total Award Period Covered: 9/15/2010 - 8/31/2015
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: NSF 12-560 Pathways: Learning through Observation: Expanding the CoCoRaHS Network

Source of Support: NSF
Total Award Amount: $249,977.00 Total Award Period Covered: 8/1/2013 - 7/31/2015
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: SAVI: Building an AIMES 2.0 Virtual Institute to Advance the Transdisciplinary Understanding of Coupled Human-Environment Dynamics in the Anthropocene

Source of Support: NSF
Total Award Amount: $1,940,537.00 Total Award Period Covered: 1/1/2014 - 12/31/2018
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Sustainability as a Socio-Cultural Challenge

Source of Support: Qatar Univ.
Total Award Amount: $0.00 Total Award Period Covered: -
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: A Systems Science Approach to Coupled Model Environments for Bio-Social Systems

Source of Support: HHS-NIH
Total Award Amount: $2,964,862.00 Total Award Period Covered: 9/1/2014 - 8/31/2018
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding Period.

Current and Pending Support

(See GPG Section II.C.2.h for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Wetmore, Jameson Michael	Other agencies(including NSF) to which this proposal has been/will be submitted

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Science Master's Program: Solar Energy Engineering & Commercialization

Source of Support: NSF-EHR

Total Award Amount: $700,000.00 Total Award Period Covered: 7/1/2010 - 9/30/2013

Location of Project: Arizona State University

Person-Months Per Year Committed to the Project. Cal: 0 Acad: .25 Sumr: .25

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: NSEC/Center for Nanotechnology at ASU

Source of Support: NSF-SES

Total Award Amount: $6,525,890.00 Total Award Period Covered: 9/15/2010 - 8/31/2015

Location of Project: Arizona State University

Person-Months Per Year Committed to the Project. Cal: 0 Acad: 4 Sumr: .5

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Developing and Assessing Macroethics Modules for the Collaborative Institutional Training Initiative Responsible Conduct of Research Courses

Source of Support: NSF-SES

Total Award Amount: $264,292.00 Total Award Period Covered: 10/1/2010 - 9/30/2013

Location of Project: Arizona State University

Person-Months Per Year Committed to the Project. Cal: 0 Acad: .25 Sumr: .25

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Partnership for Education on Climate Change, Engineered Systems, and Society

Source of Support: NAE

Total Award Amount: $217,936.00 Total Award Period Covered: 9/15/2010 - 8/31/2013

Location of Project: Arizona State University

Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: .25

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: IGERT: Person-centered Technologies and Practices for Individuals with Disabilities

Source of Support: NSF-EHR
Total Award Amount: $2,972,183.00 Total Award Period Covered: 8/15/2011 - 7/31/2016
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: .25

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Cost of Education - IGERT: Person-centered Technologies and Practices for Individuals with Disabilities

Source of Support: NSF-HER
Total Award Amount: $441,000.00 Total Award Period Covered: 8/15/2011 - 7/31/2016
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: 0 Sumr: 0

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Capacity Building in Computer Science as a Driver of Innovation

Source of Support: NSF
Total Award Amount: $248,000.00 Total Award Period Covered:11/1/2013 - 10/31/2014
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: .75 Sumr: .75

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Networks for Characterizing Chemical Life Cycle: LCNano

Source of Support: NS
Total Award Amount: $5,000,000 Total Award Period Covered: 06/01/2014 - 05/31/2018
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project. Cal: 0 Acad: Sumr: 0.5

Support: X Current Pending Submission planned in Near Future * Transfer of Support

Project/Proposal Title: Doctoral Dissertation Research: A Comparative Study of Community Engagement with Renewable Electricity Technology

Source of Support: NSF-SES

Total Award Amount: $17,978 Total Award Period Covered: 12/15/2013 – 12/15/2014

Location of Project: Arizona State University

Person-Months per Year Committed to the Project: Cal: 0 Acad: 0 Sumr: 0

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding Period.

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Annual Report for Award #0937591

Current and Pending Support

September 1, 2013 - August 31, 2014

(See GPG Section II.D.8 for guidance on information to include on this form)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Cynthia Selin

Other agencies (including NSF) to which this proposal has been/will be submitted:

Support: [ ] Current [x] Pending [ ] Submission Planned in Near Future [ ] *Transfer of Support

Project/Proposal Title: Democratizing Science: The Role of Informal Civic Learning in Shaping Sociotechnical Futures

This Proposal? [x]

Source of Support: National Science Foundation

Total Award Amount: Total Award Period Covered: -

Location of Project: Arizona State University

Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: [x] Current [ ] Pending [ ] Submission Planned in Near Future [ ] *Transfer of Support

Project/Proposal Title: NSEC: Center for Nanotechnology in Society at Arizona State University (renewal)

This Proposal? [ ]

Source of Support: National Science Foundation

Total Award Amount: $ 6,500,000.00 Total Award Period Covered: 10/1/10 - 9/30/15

Location of Project: Arizona State University

Person-Months Per Year Committed to the Project: Cal: Acad: 4.50 Sumr:

Support: [x] Current [ ] Pending [ ] Submission Planned in Near Future [ ] *Transfer of Support

Project/Proposal Title: NUE: Cross-disciplinary Education in Social & Ethical Aspects of Nanotechnology

This Proposal? [ ]

Source of Support: National Science Foundation

Total Award Amount: $ 199,157.00 Total Award Period Covered: 11/1/13 - 10/31/15

Location of Project: Arizona State University

Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: [ ] Current [ ] Pending [ ] Submission Planned in Near Future [ ] *Transfer of Support

Project/Proposal Title:

This Proposal? [ ]

Source of Support:

Total Award Amount: Total Award Period Covered: -

Location of Project:

Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: [ ] Current [ ] Pending [ ] Submission Planned in Near Future [ ] *Transfer of Support

Project/Proposal Title:

This Proposal? [ ]

Source of Support:

Total Award Amount: Total Award Period Covered: -

Location of Project:

Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

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*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

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USE ADDITIONAL SHEETS AS NECESSARY

Annual Report for Award #0937591

Current and Pending Support

September 1, 2013 - August 31, 2014

(See GPG Section II.D.8 for guidance on information to include on this form)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Cynthia Selin

Other agencies (including NSF) to which this proposal has been/will be submitted:

Support: [x] Current [ ] Pending [ ] Submission Planned in Near Future [ ] *Transfer of Support
Project/Proposal Title: Doctoral Dissertation Research in DRMS: From Analyzing to Anticipating Water Conflicts in High-Risk Dry Tropical Water Systems
This Proposal? [ ]
Source of Support: NSF
Total Award Amount: $ 7,636.00 Total Award Period Covered: 8/1/12 - 7/31/13
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project: Cal: 0.00 Acad: 0.00 Sumr: 0.00

Support: [ ] Current [ ] Pending [ ] Submission Planned in Near Future [ ] *Transfer of Support
Project/Proposal Title:
This Proposal? [ ]
Source of Support:
Total Award Amount: Total Award Period Covered: -
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: [ ] Current [ ] Pending [ ] Submission Planned in Near Future [ ] *Transfer of Support
Project/Proposal Title:
This Proposal? [ ]
Source of Support:
Total Award Amount: Total Award Period Covered: -
Location of Project: Arizona State University
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: [ ] Current [ ] Pending [ ] Submission Planned in Near Future [ ] *Transfer of Support
Project/Proposal Title:
This Proposal? [ ]
Source of Support:
Total Award Amount: Total Award Period Covered: -
Location of Project:
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: [ ] Current [ ] Pending [ ] Submission Planned in Near Future [ ] *Transfer of Support
Project/Proposal Title:
This Proposal? [ ]
Source of Support:
Total Award Amount: Total Award Period Covered: -
Location of Project:
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

NSF Form 1239 (10/99)

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USE ADDITIONAL SHEETS AS NECESSARY

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Jan Youtie**

Other agencies (including NSF) to which this proposal has been/will be submitted. **NSF**

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title**: Center for Nanotechnology in Society – Arizona State University**

Source of Support: **Arizona State University and National Science Foundation**

Total Award Amount: **$800,000** Total Award Period Covered: **10/1/10-9/30/15**

Location of Project: Georgia Tech

Person-Months Per Year Committed to the Project. Cal: 1.1 Acad: Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Credibility and Use of Scientific and Technical Information in Science Policy Making: An Analysis of the Information Basis of the National Research Council's Committee Reports**

Source of Support: **National Science Foundation**

Total Award Amount: **$350,000** Total Award Period Covered: 9**/1/2013 - 8/31/2015**

Location of Project: **University of Georgia and Georgia Tech**

Person-Months Per Year Committed to the Project. Cal: 1.5 Acad: Sumr:

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ Transfer of Support

Project/Proposal Title: **Connections: STEM Educational Research Communities and Knowledge Transfer**

Source of Support: **National Science Foundation**

Total Award Amount: **$283,269** Total Award Period Covered: **05/01/2014 -4/30/2016**

Location of Project: **Search Technology and Georgia Tech**

Person-Months Per Year Committed to the Project. Cal: 1.3 Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

NSF Form 1239 (10/99) USE ADDITIONAL SHEETS AS NECESSARY